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ABSTRACT

This collection of six essays on ITV (Instructional Television), especially as it concerns physical education, acquaints physical educators who want to produce and use ITV in their classrooms with a step-by-step analysis of the process. The essays cover production of the television series, evaluation methods and their utilization, utilization of television in the classroom, initiation of an ITV series in health or physical education, and realities and potentialities of ITV in physical education. Each essay includes a set of references, and a bibliography ends the volume. (JA)

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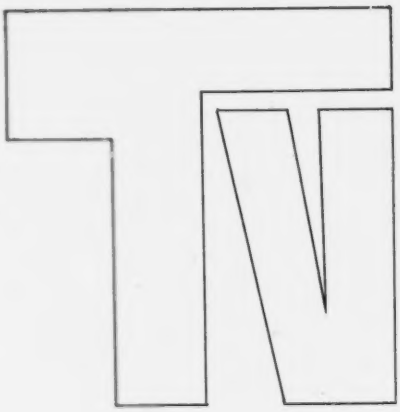

TELEVISION: PRODUCTION and UTILIZATION in PHYSICAL EDUCATION

Editor: Fay R. Biles

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FOREWORD

It has been acknowledged that television is perhaps one of the most important communications mechanisms ever designed by man. Most Americans would probably agree that television constitutes one of their principal sources of information.

Instructional television is capable of producing an impact that can be creative, refreshing, and educational. Some educators have referred to ITV as a "sleeping giant" that has never been fully aroused and awakened. Those who have worked with ITV often have found an exciting adventure in learning and a rewarding opportunity to work with a truly creative team, including classroom teachers, television teachers, and TV support staff. For the novice, ITV remains a mysterious venture until he becomes involved with a team which initiates, plans, produces, and utilizes the completed telelessons. That is the purpose of this book: to acquaint physical educators who want to produce and use ITV in their classrooms with a step-by-step analysis of the process.

The authors were chosen because of their extensive experience with instructional television and their enthusiasm for the medium as an aid to learning for students from elementary through college level. The authors have summarized each phase by presenting guidelines that will serve as a review for the reader.

The Committee on the Utilization of Television in Physical Education wishes to thank Bonnie Messer, the typist who compiled the final manuscript, and the authors, who gave generously of their time.

A book with seven authors runs some risk of duplication or conflicting ideas. The chapters are written according to each author's major interest, and no attempt has been made to change ideas to make them coincide.

The authors join me in an enthusiastic invitation to try teaching with television in your gymnasiums, pools, dance rooms, and classrooms. Help arouse and awake that enormous "sleeping giant"—make it work for you and your students.

Fay R. Biles, Chairman
Committee on Utilization of Television in Physical Education

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INTRODUCTION

This project has emerged from the work and experiences of the Committee on the Utilization of Television in Physical Education. This standing committee of the Physical Education Division of the American Association for Health, Physical Education, and Recreation (AAHPER) was formed in August 1964. Joy W. Kistler, then vice-president and chairman of the Physical Education Division, appointed an 18-member committee representing every educational level and section of the United States. Most important, all members had experience in the production and/or utilization of television in teaching physical education.

The first attempt to pool their experiences at all levels of education and from all sections of the country was made at a meeting during the 1965 annual convention in Dallas, Texas. The main item of business was to plan a realistic program of action for the committee. Committee members agreed to: construct a list of the schools and colleges utilizing television in the teaching of physical education; compile a bibliography of resources concerning the production and utilization of television in physical education; and collect and serve as a repository for teacher guides, course outlines, and similar materials used in physical education classes involving television. The committee chairman was then to serve as a clearinghouse for the dissemination of information and materials to interested members of the profession.

As an expansion of its dissemination function, the committee was granted time for informational programs and presentations at national conventions. Producers and users of televised materials in the teaching of physical education were featured at these meetings. In addition, the committee collected sample lessons of televised instruction in physical education for viewing during the conventions. In Chicago in 1965, a closed-circuit viewing center provided continuous viewing of excerpts from numerous sample lessons in teaching health and physical education at various levels. This was so well received that entire lessons were televised by open circuit in conjunction with the conventions in St. Louis, Boston, and Seattle.

In 1965, a subcommittee met with Ed Cohen, executive director of the National Instructional Television Center (NITC), at Bloom-

ington, Indiana to plan a national conference on the use of television in health and physical education. NITC very generously sponsored this conference and published the report, which included the most comprehensive listing of courses in health and physical education in which television was utilized. The conference provided the identification and verification of the need for televised instruction in elementary school physical education, out of which NITC developed and produced the present series, *Ready? Set...Go!*

In another effort to provide the profession with information and materials, a subcommittee joined with the Midwest Program on Airborne Television Instruction at Purdue University to develop an elaborate proposal and request for federal funds. While the request was submitted at the wrong time strategically, funds for such projects were being reduced and the proposal failed because of funding. It illustrates, however, the work of the committee through the years.

Since its inception, the committee has been bombarded with inquiries concerning the production and utilization of television in physical education. Concurrent with the above activities, mimeographed copies of bibliographies, lists of teacher guides, course outlines, copies of the National Conference Report, and personal correspondence were distributed nationally and to several foreign countries. The nature and frequency of these requests supported the committee recommendation to the Physical Education Division that a publication devoted to the production and utilization of television in physical education should be developed and printed.

In March 1969, AAHPER recognized this need by honoring the committee's recommendation. Funds were allocated for a three-day writing conference in Columbus, Ohio. Six authors, selected because of their experience and qualifications in televised instruction in physical education, were invited to contribute to the project.

Chalmer G. Hixson, Director
AAHPER Resource Center on Media
in Physical Education

CHAPTER 1 REALITIES AND POTENTIALITIES OF TV IN PHYSICAL EDUCATION

Bonnie Cherp Gilliom

In Columbus, Ohio, in a given week, 30,048 elementary school boys and girls watch televised physical education lessons followed by activity sessions in gymnasiums during the coming week.

At the University of Wisconsin, a young physical education major carefully analyzes her gymnastics performance on instant replay half-inch videotape.

In dozens of teacher training institutions, the viewing of videotapes of outstanding high school class sessions enables college students to observe and discuss a variety of teaching techniques without having to travel to widely scattered schools.

In several high schools lacking qualified golf teachers, the juniors and seniors, with clubs in hand, follow every step of skill instruction from a TV instructor.

In college methods classes, teachers-to-be bridge the confrontation gap by going into schools (before student teaching) to teach micro-lessons which are recorded on videotape and then are analyzed rigorously by the microteachers themselves, by their peers, and by their course instructors.

During student teaching, additional taped "bits" may be acquired as documentation of the student's growth in the techniques of teaching.

In after school sessions, groups of teachers tune in to in-service TV series designed to inform them of contemporary theory and practice in physical education.

These widely differing examples of television usage indicate that instructional television and the physical educator have met and found many ways in which they are compatible. Notice the different audiences in the examples: elementary school children, secondary school and college students, and in-service teachers. Notice, too, the widely differing means of production: a series so meticulously produced that it is nationally distributed, a locally

produced series geared to the needs of a particular group of teachers, and a homemade "bit" on videotape to be seen and analyzed once by its producer and then erased. The numbers of viewers in the examples range from a broadcast over a state network, which potentially could be seen by everyone in the state, to an audience of one person viewing his own homemade tape on a small portable closed-circuit system. If, during the past 15 years, physical educators have searched for and found such a variety of uses for TV, think what the future may hold with its greater availability (more channels for broadcasting, a greater variety of closed-circuit systems at less expense, and cartridges for easing scheduling problems).

Thus far, the most enthusiastic users of televised physical education programs have been elementary teachers who are responsible for teaching all subjects, including physical education. They have been quick to recognize their limited background in a complex field and welcome the help that a TV series in physical education brings them. Physical education specialists (elementary, secondary, or college level) have been slower to perceive the many ways in which TV can assist them. Many seem to be simply unaware of its possibilities. A few harbor the unfounded yet honest fear of being in competition with a TV teacher. Another common fear, which also rapidly diminishes with experience, is that of perceiving TV as an omnipotent, job-usurping force which could diminish the teacher's role to that of attendance taker and paraprofessional supervisor.

In this book, the authors hope to encourage physical educators to throw away these unfounded fears, to re-examine the teaching-learning processes of their discipline, and to consider seriously what portions of these processes might be facilitated by TV. In this chapter, the author hopes to clarify some of the terminology and to examine four widely different uses of TV in physical education. Past examples of each type of usage will be cited and additional creative uses will be encouraged.

In looking to the next 15 years, one hesitates to predict the impact TV could have in physically educating students for fear of sounding like a science fiction writer. Yet, with satellites now parked 22,000 miles out in space which are capable of reaching one-third of the globe simultaneously and with cable TV systems providing many new channels, the likelihood increases that in the near future every student in the United States will receive some of his physical education instruction via TV.

The major purpose of this publication is to offer guidelines for planning, producing, and utilizing TV for improving the learning of physical education. As we are on the brink of an explosion of TV usage, we should ask ourselves some hard questions. Are physical educators ready to teach *with* TV, to use this powerful communication tool in such a way that student behavior is actually changed? Are we sophisticated enough to put the emphasis on student learning rather than on lightening a teacher's load, reducing costs, or saving time? Do we fully understand that TV requires both carefully planned *intelligible transmission* and *intelligent reception* before it can contribute to student learning? Do we realize that TV is a *qualitatively* neutral medium, capable of carrying good, bad, or mediocre programming? Are we fully aware of the *quantitative* potentiality of the medium for transmitting those good, bad, or mediocre (or outdated) programs to countless viewers and of repeating them indefinitely in the future? The vast bulk of research on the use of ITV continues to report "no significant difference" in learning with or without TV. Technology has made it easy for us to send our messages. Do we physical educators have the ability to structure those messages so that human beings become significantly better physically educated?

DEFINITIONS

The term *television* is used in its broadest sense and includes open-circuit broadcasting, closed-circuit operations (CCTV), 2,500 MHz (ITFS) systems, and cable television (CATV). It ranges from the simplest one room portable TV production package (videotape recorder, camera, and monitor), which is suitable for the production of taped "bits" to be used as *instructional aids*, to the most complex broadcast systems worthy of the name *instructional media*.

Television is basically an electronic medium capable of delivering an infinite number of identical audiovideo messages to people physically separated by space or time. The terms below are types of TV programming appropriate for teaching physical education. Figure 1 shows the relationships among these programs.

Public Television (PTV) messages are characterized by the intent to promote learning, change behavior, or nourish an existing cultural or recreational interest.

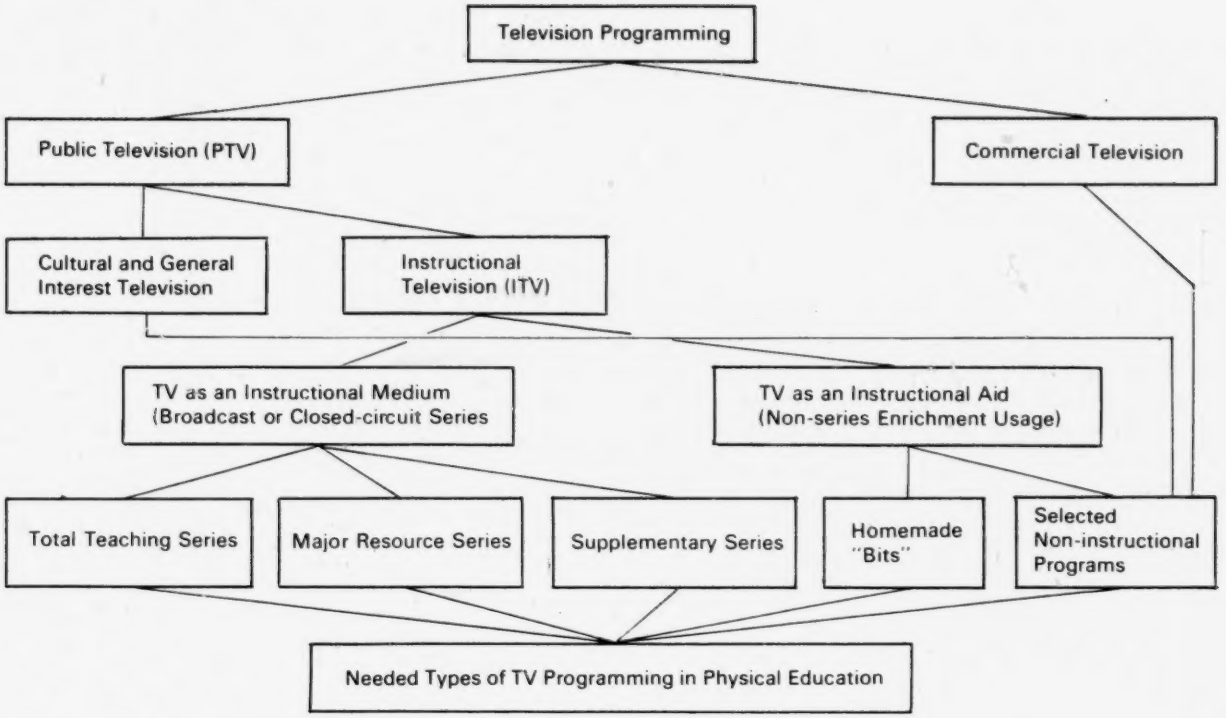
Television Programming
Public Television (PTV)
Commercial Television
Cultural and General Interest Television
Instructional Television (ITV)
TV as an Instructional Medium (Broadcast or Closed-circuit Series
TV as an Instructional Aid (Non-series Enrichment Usage)
Total Teaching Series
Major Resource Series
Supplementary Series
Homemade "Bits"
Selected Non-instructional Programs
Needed Types of TV Programming in Physical Education

Figure 1. Types of TV Programming

Cultural and General Interest Television refers to that portion of PTV programming designed to nurture existing aesthetic or recreational interests. The audience is not part of a formal instruction system.

Instructional Television (ITV) is that portion of PTV programming planned for and received by audiences who participate in an ongoing formal instructional system, e.g., nursery school, elementary school, secondary school, college or university, adult or continuing education system.

ITV as an Instructional Medium refers to the systematic use of a series of TV programs for presenting total teaching, major resource, or supplementary aspects of a curriculum to students.

Total Teaching Series is a series of TV programs designed to fill a complete void in a curriculum. It may be viewed in a school setting and be accompanied by textual materials, but it does not depend on teacher-student interaction.

A Major Resource Series is designed to structure a course of study. It is often used to bring large-scale innovation into an existing program. A classroom teacher using a major resource series finds his roles as manager of the emotional and social classroom environment and facilitator of individual learning expanded in exchange for losing some autonomy in selecting content and determining the pace.

A *Supplementary Series* is designed to illuminate audiovisually some portions of a course. It may cover introductions to many units or give in-depth coverage to a particularly difficult unit. It is truly supplementary in nature and allows a teacher the autonomy of structuring his own course and selecting those programs which fit his students' needs.

ITV as an Instructional Aid refers to the non-series or non-program use of TV as an audiovisual tool for presenting supportive or enriching material to students.

Non-Instructional Programs, carried over commercial or public TV stations, are not designed for classroom use but often provide excellent takeoff points for classroom discussions and should not be overlooked by teachers as enrichment assignments.

The *ITV Bit** is a non-program observation of a happening, often captured on videotape for later analysis, e.g., a dentist pulling a tooth, a student teaching a microlesson, or a diver executing a swan dive. In contrast to a broadcast quality program or telelesson which requires a large number of talented people and expensive equipment, a bit may be produced and used by a single individual at minimum cost.

The terms defined above may serve as a framework for considering the variety of uses of TV in physical education.** In the following section, we shall look at three traditional types of ITV series which require high professional standards, both in an instructional sense and in a technical telecasting sense. In the last section of this chapter, we shall look at the more freewheeling ITV bit production with its exciting experimental opportunities for teachers and students to become creators and users of their own mini-programs.

ITV AS AN INSTRUCTIONAL MEDIUM: THREE TYPES OF SERIES

Although many educators are unaware of it, three distinctly different types of TV series have evolved for different instructional purposes: total teaching series, major resource series, and supplementary series. Each type has its own characteristics and is designed to aid pupil learning in its own way. One of the earliest decisions that must be made when initiating a TV series is to select the role the TV series is to play. To aid physical educators in making this decision, each type will be examined – (1) the characteristics described, (2) examples of past successes given, (3) criterion question(s) posed, and (4) needs which could be met by that series suggested.

*The term *bit* is an abbreviated form of binary digit and is borrowed from modern digital computer terminology and from information theory. Essentially, it means that if there exists uncertainty and we receive information which halves that uncertainty, we have received one bit of information. A great deal of uncertainty exists when one speaks of having seen a tape, a telelesson, etc. Thus, the term *bit* for non-program entities seems appropriate both because it halves the uncertainty of whether one is speaking of a scheduled, complete TV production or of a happening captured on tape, and also because it connotes the short rather than the long television program.

**Additional terms are defined in Chapter 2.

Total Teaching Series

Characteristics. Total teaching series are rare. No one claims they are the most noble use of TV, yet they fill an urgent need. A total teaching series presents the total information for a course. There is no classroom teacher; often there is no classroom, yet registered students take the course as it comes from the receiver. Successes with total teaching series have resulted when no classroom teachers have been available for a particular subject and when students were eager for help.

Typically, the student views the telelessons (anywhere from one to five a week) at home or with another student or two at school. His self-teaching, self-disciplining potential is put to the test. He has no one to answer his questions but himself . . . he has no scheduled opportunities to discuss what he has seen . . . he must "grasp it as it goes by." On the other hand, he usually has access to textbooks or manuals accompanying the course and often can find someone to discuss the program content with him.

Researchers have not yet identified all of the parameters of learning without human interaction, but there exists some research indicating that learning does occur from watching TV lessons without teacher-child interaction. The children watching *Sesame Street* are prime examples. Preliminary tests in Maine, New York, and Tennessee show that children who viewed the series regularly and without teachers during its first six weeks made achievement gains 2½ times as great as a control group of children who did not watch the program (8).

Areas of Success. Total teaching series have filled pressing educational needs in two key areas: in small rural schools which enroll perhaps only two or three students who are college-bound, and in adult or continuing education. In the former instance, college-bound students are receiving advanced courses in science, mathematics, and foreign languages for the first time. They view the series on their own, receive books and manuals to accompany the TV lessons, and take their examinations at the nearest center or university. In adult or continuing education, total teaching series are available to serve human needs from the uneducated to the highly educated. At one end of the educational scale, the illiterate watch *Operation Alphabet*, which instructs them in reading and writing in the privacy of their own homes; at the other end, physicians and dentists are being kept informed of the latest research

developments and techniques by viewing series in their offices or homes.

Criterion Question. At first glance, the reader might ask himself of what possible value a total teaching TV series could be to physical education. If this were the best of all possible worlds, the answer would undoubtedly be, "None." But in the real world, are there not elementary, junior, and senior high schools where no physical education exists . . . where no physical education teachers are available . . . where physical education is on the books but in reality only "free periods" exist? A major theme of this book is that physical educators should search out all the nooks and crannies of their discipline in which TV can assist learning. A simple but powerful criterion question becomes: *Is using TV a better alternative than not using TV?* In the case of a total teaching series, the question becomes: *Is developing a total teaching series a better alternative than perpetuating a non-existing physical education curriculum?*

Needs. Although there is a shortage of qualified, certified physical education specialists for elementary schools, a total teaching series is not a good alternative since classroom teachers should be available to help teach physical education; a major resource series or a supplementary series is more suitable. In secondary schools which lack instruction in physical education, total teaching series should be used only until certified teachers can be obtained.

Leaving the ITV field for a moment and going to commercial TV, have you ever wondered why physical educators have not initiated more total teaching series for commercial television? Have you watched the Saturday morning TV cartoons for children? Why haven't we tried to replace one of the violence filled Saturday morning spots with a series capitalizing on a child's joy in movement? Why not a summer vacation daily show or a *Sesame Street* with a priority on psychomotor learning? If *cognitive* learning can be so effectively motivated through TV, why not *motor* learning?

Still in the commercial TV field, have you watched the "muscle men's" condescending exercise shows for women? Why haven't we designed an activity series of lifetime sports skills for adults? Such series could be offered for credit (with appropriate textual material, practice opportunities, and evaluation techniques), or could be public service programming on PTV or on commercial stations (perhaps underwritten by sponsors such as life insurance

companies, dairy councils, etc.) Why not a Julia Child in physical education?

With the coming availability of channels and inexpensive tapes for home or school usage, we should not stop our search for problem areas that could be alleviated by total teaching series. What are our minority groups to be served? Anyone for rugby, modern dance, or games for the handicapped? Preschool, adult, and continuing education are especially ripe for innovative total teaching series in our field.

Major Resource Series

Characteristics. A major resource television series is one which gives structure to a course yet requires active participation by classroom teachers who use the series. It differs greatly from a total teaching series in that the teacher and classroom are essential. A major resource series gives structure in the same way that a textbook is often used by teachers to determine scope and sequence of a course. Anywhere from one to five telelessons per week are produced, with each building on the previous one in a developmental fashion. Teachers and students usually watch all the TV lessons as an integral part of the course.

While the majority of curricular presentation is accomplished via TV (the introduction and development of key concepts and generalizations), the classroom teacher performs the interpersonal functions so vital to student achievement. He continues to function as the manager of the emotional and social classroom environment, as the facilitator of individual learning, and as the counselor of learners. Are these not the most professional (and difficult) of teaching tasks? No TV set has ever identified individual needs, arranged learning experiences to meet those needs, interacted in exciting classroom dialogue, or provided empathy or sympathy with the individual student who is troubled or who is ready to move ahead of his class.

Areas of Success. The popularity of major resource series is greatest in elementary schools with no specialists in physical education, art, music, science, math, social studies, or remedial reading. These subjects have been taught in a major resource sense on TV throughout the country. Colleges and universities, pressed with more students in required courses than can be scheduled in small classes, often use TV major resource series to present core in-

formation by professors, with graduate assistants conducting follow-up small group discussions, practice sessions, or counseling.

Criteria Questions. The "better alternative" criterion should again be applied before developing major resource series. This time the questions are: *Do teachers in the community need assistance in course structuring? Will using a major resource series be a better alternative than the existing curriculum?*

Another criterion question should be asked. *Is a series available on tape which fits the philosophical and psychological long-range goals of the school?* This brings up a second major theme of this chapter—the need for a variety of packaged series reflecting a range of approaches to a discipline. The most prevalent fear of technology is that of automated, standardized messages producing automated, standardized human beings. The hardware is available for creating a standardized national curriculum. The software, the variety of high quality series from which to choose (which can prevent such standardization), is not yet available in physical education. We cannot blame the technologists for our slowness in producing multiple series from which a community may select the approach best suited to its long-range goals.

This is not to be construed as a plea for every community to "do its own thing," since an enormous commitment of talent, resources, and time could be spent in redundant effort with every other community producing essentially the same series. If total teaching or major resource series are planned for distribution, however, producers should seek to provide a varied menu from which educators can select the series which most closely fulfills the needs of the students who will view it.

Needs. A major resource series is an excellent tool for disseminating and implementing innovations in a subject field such as the new movement education approach in physical education. Such series could be designed with "self-destruction" as a goal. They could be accompanied by teachers' manuals which provide a scholarly rationale for the innovative content as well as practical "how to do it" details. The self-destructive intent of such a series should be so thorough that the series could be dropped in a year or two after classroom teachers have become confident and proficient in handling the new approach. New math, health science, and a few physical education series have been developed with this intention.

A case study of the conception, production, and destruction of a major resource series in eighth grade health science may serve as an example. In Columbus, Ohio, some years ago, a curriculum study group of teachers worked diligently for several years to prepare a two-semester required course in health science to replace the existing unsatisfactory one semester of health and one semester of science. The resulting course guide, thick as a city telephone directory, seemed a masterpiece of curriculum engineering. No adequate textbook could be found, but the guide contained so many excellent resources that it was agreed a text was unnecessary. The only major setback occurred when it was discovered that very few teachers were qualified to teach this new course, which ranged from the study of optics to emotional disturbances, from sewage and water treatment to dating. Consequently, a daily 25-minute major resource TV series was planned as Phase I to implement the new approach.

As the TV teacher of that series, I would like to tell you about a discovery I made. The cooperation of the community in helping to produce the ITV series was overwhelming. No one said no to requests for assistance. The most complex of demonstration equipment was loaned; the governor, scientists, physicians, and executives who took time out to appear on the telelessons could never have personally visited every school in the viewing audience; Coach "Woody" Hayes of Ohio State University made an appeal for students to get yearly health examinations . . . and doctors' phones were jammed immediately after school on that day.

One cautionary note should be added in discussing major resource series. There is often a temptation to try to address too many audiences simultaneously. Deliberate in-service education for the teacher should not be part of a student series. Too often, a student's rapt attention is turned off by the TV teacher's saying, "Classroom teachers, notice that...." Prior to such an intrusion, the student was highly involved in a one-to-one relationship with the TV teacher. Suddenly, he became an outsider. In-service education programs should be separated from student telelessons, although observant teachers will benefit from student series.

To continue the health science story, at the end of the two years of massive assistance to the health science teachers, they indicated they were ready to assume the responsibility of structuring the course themselves. It was time to be self-destructive. They

had become confident and proficient in teaching the new subject matter, but were reluctant to give up the best of the demonstrations and guest appearances on TV which would be impossible or very difficult to arrange in the classroom. Thus, the teachers decided to switch from the major resource series to a supplementary series.

In summary, a major resource series can be an excellent change agent. When complex curriculum revision is needed, major resource series should be seriously considered as an effective and efficient means of introducing change.

Supplementary Series

Characteristics. Moving from an examination of major resource series to an examination of supplementary TV series, we find that teaching roles differ widely between the two. The classroom teacher using a supplementary TV series performs the more traditional duties—structuring the course, presenting key concepts and generalizations, and determining scope and sequence. I once heard a teacher say that "using a major resource series is a full-time business partnership while a supplementary series is more like having an occasional guest speaker-demonstrator stop in the classroom." The supplementary TV series elaborates and illuminates, but does not attempt to change a curriculum radically. In a few rare cases, it becomes an inquiry agent.

It is difficult to generalize about the characteristics of a supplementary series since its chief characteristic is its flexible use by teachers and students. It may be scheduled as often as once or twice weekly or as infrequently as once every six weeks. It may be used to provide stimulating introductions to each new unit with telelessons scattered throughout the year, or it may provide in-depth coverage to one unit with telelessons concentrated within a month's time. While teachers usually want their students to view every telelesson in a supplementary series, the telelessons are not cumulative or essential to course continuity. Every teacher has the prerogative of using only those programs which fulfill special needs.

Areas of Success. Most secondary school teachers, being subject certified, feel more comfortable using a supplementary series than a major resource series. It enables them to do their own structuring while retaining the best aspects of the medium—the introduc-

tion of new curricular trends, the models of motor performance, unlimited visual experiences culled from the whole field of audio-visual devices, and the observation of a co-teacher at work.

In elementary schools, colleges, and universities, supplementary TV series in science, social studies, and mathematics have been particularly popular. In secondary schools, supplementary series are widely used in all subjects *except* physical education. The only physical education series listed for secondary schools in current surveys is one entitled *Fundamentals of Golf*, produced in Oxford, Ohio (7).

Needs. Why don't we have short supplementary series in every major unit in elementary and secondary physical education to be broadcast at appropriate seasonal times? Teachers (specialists) who feel any insecurity in a particular unit (e.g., soccer, trampoline, ethnic dance) could arrange their teaching plans to correspond to the time when that unit was offered on TV. Some teachers and their students might watch all the telelessons in a unit; others might select only one on a particular skill or strategy. Some teachers might watch the series without their students to review or update their knowledge. Some teachers might assign one or more individual students to watch certain episodes or all of a supplementary unit on TV. Here is an opportunity for individualizing teaching.

At the college level, short series could be developed to accompany nearly every physical education course. In teacher education, for example, the value of college students' observing a variety of teachers in action is rarely questioned; yet the logistics of physically transporting large college classes to schools and the disadvantages of rambling, on-campus discussions by participants who observed dissimilar classes have discouraged many educators and students. By taping a series which introduces and evaluates a variety of teaching approaches in action, and by employing some of today's sophisticated tools for analyzing the televised teacher-class interaction from different vantage points (social, emotional, conceptual, communicative, aesthetic), student observations of common experiences could become much sharper in focus (3).

Supplementary TV holds the greatest promise as an invaluable aid to education because of its flexibility. Teachers are free to use the telelessons as they see fit. In view of technological advances, we need to identify our problem areas in physical education and begin producing short supplementary series which attack these problems.

In the near future, a teacher will be able to drop a cartridge filled with a videotaped program into his TV set as easily as he now drops a record on a phonograph. With half-hour tapes costing perhaps less than $10 each, any school or classroom can develop its own tape library. We in physical education will have to extend our abilities to create messages equal to the potential of such an available, powerful, and flexible medium.

ITV AS AN INSTRUCTIONAL AID: NON-SERIES BITS FOR ENRICHMENT

Characteristics. Leaving the world of the TV series with its need for telecasters and television studios, we come to the fastest growing use of TV—the *non-broadcast*, or *bit*. Characteristically, a bit is a short happening captured on videotape. The terms VTR and electrography refer to the equipment and the process used to obtain a bit. An inexpensive, portable TV camera (with or without sound), a lightweight, helical scan videotape recorder, and a small monitor are required. Amazingly, the whole recording and replaying operation can be so simple that any teacher with 10 minutes of training can effectively perform the technical task. His product, the videotaped bit, will not be of broadcast quality nor does it need to be.

I must admit that with 10 years of experience under the best studio conditions—beautiful lighting, acoustically controlled sets, professionally prepared visuals; carefully written scripts and shot sheets, etc.—I was apprehensive when I first saw some of the imperfect bits produced by a professor who was videotaping his students' fledgling efforts at teaching a microlesson. Later, upon observing the soul-searching discussions of the replayed, slightly dark, noisy bits, I realized that high quality picture and sound standards are unnecessary for bit production at this time. If anyone should be advising teachers on what to do with low cost portable systems, it should be learning theorists rather than professional broadcasters. How and when could TV bits (1) be used as models for identification; (2) reinforce previously introduced concepts; (3) create the disjunction that leads to cognitive restructuring; and (4) lead to inquiry or structuring rather than to conclusions?

Areas of Success. Many uses of bits have already been mentioned. Coaches tape practice sessions or games for later study; teachers

tape outstanding demonstrations of skills for students to use as models and then replay them over and again while students are practicing; stop action is used for further analysis; students tape their own performances for self-study; interscholastic athletic competition is recorded on videotape (each coach tapes a free exercise routine, for example, and the tapes are sent to judges); professors tape speeches of outstanding authorities in the field or exchange "chats" on tape to replay for their students and to build an archive; remedial postural records are accumulated on videotape; teaching performances are filmed and analyzed; and vignettes are staged which serve to stimulate discussions.

Need. Bits should be used to get something out of the learner rather than to get something into him. Bruner says the learner must be tempted to explore and manipulate, that he "must be saved from being bench-bound," an apt analogy for our field (1). Wigren states that too much ITV is devoted to covering rather than uncovering subjects (9). Bits are the most personal, individualized way we can uncover subjects or get something out of the learner. The act of observing oneself on videotape, followed by rigorous evaluation, is akin to self-discoveries achieved through sensitivity training. The tape "tells it like it is." With micro-teaching, the student is no longer working with "hypothetical pupils in hypothetical schools preparing for a hypothetical future" as a teacher (2). He is teaching real students and analyzing his performance with his peers and professors. More opportunities for critical self-evaluating via videotape should be planned.

Whatever is especially difficult to demonstrate or see comprises good bit programming. Slow motion and stop action add to the analysis potentiality of the bit.

Turning to the commercial TV field, students can be assigned to watch "bits" of sports events on TV for specific purposes. Spectating is a role nearly all students will play in the future, yet we seldom appreciate the value or teach the skills of this activity in physical education programs.

To list all the possible uses of bits would negate the creative potentialities of the inexpensive, portable videotape packages which have opened a new era in ITV. This era should be dominated by the inexperienced but creative amateur, the professional educator.

Summary

J. Richard Suchman has very neatly stated the central idea of this chapter: "Television should be a tool in the hands of the teacher; he must be free to *select* from the widest possible range of offerings. Classroom programming should allow the teacher to pull from the TV fare the things that fit into the kind of teaching *he* wants to do." (5).

The TV fare in physical education, to date, could not be described as the widest possible range of offerings from which a teacher could select. Given that in the near future every student in the United States could, and probably will, receive part of his physical education instruction via TV, the following guidelines are recommended for developing the needed smorgasbord of ITV programming:

Guideline: Physical educators should examine the processes of becoming physically educated and determine which processes could best be mediated by TV.

They need to ask, for example:

When are models needed? . . . what models? . . . how many? . . . how often? . . . for what purposes?

When is reinforcement needed? . . . in how many different ways? . . . how often? . . . for what purposes?

When must a student solve his own problems in order to learn? When should he be encouraged to develop his own styles and strategies? When should he elect the sports or physical activities in which he has special interest? Is instruction available in a wide range of activities?

Of what is instruction composed? What activities will lead students with widely differing learning styles to attain the skeletal knowledge, attitudes, and skills (physical, social, and thinking skills) needed to become physically educated?

Guideline: The enhancement of student learning should be the primary reason for developing TV programming in physical education.

Only when TV facilitates the learning of the knowledge, skills, and attitudes of physical education should it be used in schools.

TV is too costly not to make a significant difference in learning. To ascertain whether learning has occurred, specific behavioral objectives (knowledge, skills, attitudes) should be defined, followed by measurement of the degree of achievement of those objectives after the combined TV teacher-classroom teacher instruction.

Guideline: Selection of the type of TV series to be used should be determined by the needs of the students, the state of the existing curriculum, and the availability of certified physical educators.

Guideline: To insure a wider range of TV offerings for meeting local needs, physical educators should initiate and develop a variety of series.

Total teaching series are needed to implement physical education curriculums where none exists.

Major resource series are needed for elementary schools without specialists and for any level where large-scale curriculum revision is needed.

Supplementary series are needed to illuminate audiovisually every unit of study in physical education, allowing teachers to select and use them very flexibly.

Guideline: In addition to using high quality, packaged ITV series, physical educators should make every effort to obtain low cost, portable, helical scan VTR systems for bit productions.

Bit analysis has proved to be an exceptionally fruitful learning activity, and the creative teacher will find many ways to use bits to individualize and enhance learning.

Advances in television technology are increasing; community antenna systems, satellites, ITFS systems, and cartridges are making TV an ever more pervasive delivery system. An instructional technology survey reveals that 82 percent of all pupils attend schools which have TV receivers and that 25 percent of all schools have VTRs for bit production (6).

Technologies, as McLuhan stresses, are always "put out" long before they are completely "thought out" (4). The thinking out is up to us. If we think out and develop our programming with care,

we should be able to physically educate better than we have in the past.

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CHAPTER 2 INITIATION OF AN ITV SERIES IN HEALTH EDUCATION OR PHYSICAL EDUCATION

Dan Leviton

One purpose of this book is to provide a supportive frame of reference for the physical educator or health educator interested in developing an instructional television program. A second purpose is to provide guidelines that are helpful in meeting this goal. This chapter will offer some concepts on initiating a classroom television series in physical education (or health education).

It may be encouraging to know that most studio teachers and researcher-writers are recruited primarily from the classroom. They envision the potential of the medium for education and are motivated to learn a new skill. One soon learns that teaching before a camera and writing for television are quite different from traditional classroom instruction or other forms of writing. It is a credit to instructional television productions that their program quality is high, especially when one remembers that studio teachers, at first, are essentially television amateurs. This is not to suggest that every classroom teacher should envision a career for himself in television. Selection standards for this position are rigorous since the success of the show depends upon the studio teacher's ability to "come across" over the tube.

The guidelines in the book are based more upon experience than upon scientific evidence. They should be interpreted loosely rather than as the final work of an omnipotent authority. There is a great need for scientific investigation in educational television, a point which Bob McLaughlin discusses in a subsequent chapter.

The television series described below is almost an ideal one in terms of staffing, budget, and technological considerations. Yet from this example certain guidelines are offered which may be applied to a wide variety of situations.

Before discussing the initiating of an ITV physical education series, certain terms should be defined beyond those mentioned in Chapter 1.

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DEFINITIONS

Educational Television (ETV) and Instructional Television (ITV). Traditionally, *ETV* refers to television of an educational nature that is usually produced by an educational television station. Programs are targeted for a highly variable audience—the young and old, high school dropouts and college graduates, sports enthusiasts and foreign affairs devotees.

ITV is concerned with school instruction via television. Consequently, it is aimed at a specific audience—the student (elementary, junior-senior high, college, and post-graduate). The instruction is usually in the form of courses (broken down into telelessons), workshops, and seminars, and is seen on a TV set in the classroom. ITV is generally considered to be one phase of ETV. For our purpose we will use the term ITV to refer to classroom-directed television instruction in physical education or health education.

Videotape Recorder (VTR). A *VTR* is an instrument much like an audiotape recorder. It records on videotape (VT) both video and audio impulses. VTs can be produced, shipped, and used by other television facilities. They may also be "erased" for re-use.

Kinescopes. A *kine* is a 16 mm sound film version of a videotape. As for any film, a suitable projector is necessary for viewing. The quality of the picture is inferior to VTs. Kines are especially valuable for schools that wish to use ITV programs but lack VT playback equipment.

Visuals and Properties (Props). Any object which is used to visually reinforce a concept is a *visual.* Pictures, paintings, and diagrams fall into this category. In a sense, a *prop* is also a visual. Props help to dress-up a set (the location and space where the telelesson is recorded). Props include tables, chairs, background scenes, blackboard and chalk, and demonstration materials. If children are used in a demonstration, they, too, are visuals.

Talent. The studio teacher and others who regularly perform on the telecast are known as *talent.* In some cases, the talent includes guests and consultants. The terms talent, studio teacher, and television teacher or instructor are synonymous. In many cases, the talent functions as the producer and/or the researcher-writer.

Producer. The *producer* is the architect of a television production. He understands the objectives of the program and must coordinate the script, visuals and props, ability of the talent, cinematography, etc. into a television-worthy production. Obviously a close working relationship among the talent, producer, director, and researcher-writer must exist.

Director. Once the production goes into the studio for rehearsal or actual production, the *director* is in complete charge. Like a captain of a ship, he is responsible for all that goes on while the cameras are rolling. He must elicit high caliber camera work, acting, sound, lighting, music, and other effects.

Researcher-Writer (RW). The *RW* is the expert on all subject areas. No one questions his authority on content matters. Often he lacks the experience and training necessary to write for television but, with time, the skill can be learned. In some cases, a person may function as talent, producer, and RW.

Executive Producer. The researcher-writer is the final authority on subject matter; the director is captain of the ship once inside the studio and camera work begins; and the producer coordinates the efforts of the RW, talent, and director. The *executive producer* has the final authority on *all* matters pertaining to the entire production. While others are captains of their particular ships, he is admiral of the fleet. This is understandable when one realizes that this person usually has expertise and sophistication in both television and education. He functions as the nexus between the school systems' administrative hierarchy and the television studio. With his authority is coupled the responsibility of providing top quality television programming for the schools.

Production Assistant-Secretary (PA). The *PA* is responsible for helping put the show together in ways too numerous to mention. Usually a woman, she may have to secure visuals and props, apply make-up to the talent and guests, type and run off copies of the script, participate in script conferences, and prevent the producer, director, researcher-writer, and talent from self-destructive acts when things go wrong on black days.

Crew. The *crew* is the backbone of the actual television production. Crew members include cameramen, floor men, prop men, and a variety of sound and visual technicians. They work in close cooperation with the director and are ultimately responsible to him.

Script Conference. Several weeks before the taping of each telelesson, a *script conference* is called to analyze and criticize the script. Questions are asked and answers found. The goal is to improve the script through the collective effort of the production staff. Examples of the questions asked are: Are the objectives of the telelesson met? Is the lesson understandable to the student and teacher? Are the concepts presented in progressive and logical steps? Are key concepts reinforced? Above all, is the telelesson interesting to the viewers? How can it be made more interesting? What props and visuals are necessary? Where can they be obtained at minimum cost? If guests are to appear, have they signed a "clearance"? Do they know their time of arrival and appropriate dress for the production? Will they receive an honorarium (many guests and consultants appear gratis on ETV programs.

The script conference is not for the fainthearted or the overly sensitive. It is here that the script is meticuously examined sentence by sentence for defects. One's political influence, advanced degrees, professional position and/or salary provide little protection against that intellectual exercise called a script conference. During the conference all of man's emotions are exposed to view. Initial feelings of helpfulness and altruism to one's fellow colleagues give way to anger, hostility, and frustration. Soon, however, there is a meeting of minds and compromise. The product of the script conference? . . . a much improved script. Intelligent executive producers usually conduct script conferences in such a way that hurt feelings are assuaged and morale restored.

EVALUATING THE NEED FOR ITV IN PHYSICAL EDUCATION

Generally speaking, the *need* for a program must be established before support can be gained for it. Need arises when certain situations exist. For example, elementary school classroom teachers are often responsible for physical education instruction. Yet physical education for elementary schoolchildren is becoming highly specialized as scientific knowledge increases. Specialists in physical education would probably be interested in developing psychomotor skills, body awareness and control, and a basic understanding of movement concepts in their students. On the other hand, general classroom teachers probably would feel inadequate in teaching such specialized content. In this case, they might express their

need for support in teaching physical education. Gaining the support of classroom teachers would be a major step toward initiating ITV programming. If teachers perceive ITV as supportive and supplementary to classroom instruction, much of their resistance to it would be reduced.

To illustrate the supportive nature of ITV, the teachers' manual for the elementary physical education series *Ready? Set . . . Go!* says:

> The course, composed of 30 television lessons and this manual, has been oriented toward you, the classroom teacher responsible for physical education instruction. The manual has been designed to assist in preparation for use of the television lessons, to outline the television instruction, and to aid you in developing follow-up material based on the television experience. This course should help you develop insight into ways to evaluate children's movement, movement characteristics, teaching techniques, organizational procedures, and use of appropriate content (2).

Thus, ITV is designed to supplement or enrich instruction and not to usurp the function and role of the classroom teacher. Also, ITV can provide in-house or in-service training for classroom teachers.

Even in communities where a shortage of physical educators does not exist teaching can be improved by utilizing specialists and experts via ITV. A batting lesson by Ted Williams or Stan Musial would be helpful to physical educators, especially if their specialties are in sports other than baseball.

ITV allows uniformity of instruction to a large number of students. At best, a classroom teacher can instruct the students in his school. ITV, on the other hand, can reach many times that number. All that is required is a television receiver in the classroom or gymnasium.

To illustrate this point let us briefly consider health education instruction in the Washington, D.C. area. Health education instruction in this area (which includes 20 school systems in Washington, Maryland, and Virginia, both public and parochial) is highly variable. Some districts have excellent instruction with a full-time health educator at some schools while others offer nothing. By utilizing *Health: Your Decision* and other programs (offered in a package), approximately 450,000 students are able to receive high quality, valid health education.

Guideline: ITV has the ability, at a relatively low cost, to (1) reach a large audience with expert, valid instruction, (2) support and update the skills, teaching processes, and teachers, (3) provide telelessons which can be repeatedly shown via kinescopes and videotapes, (4) provide quality in-service training for teachers, and (5) provide quality instruction when it is either absent or variable.

The most powerful allies for educational innovation and experimentation are classroom teachers. If they see the need for programs such as *Ready? Set . . . Go!*, ITV can be sold to school administrators. The reasoned demands of teachers can do much to gain the support of supervisors of physical education, directors of instruction, and superintendents and boards of education.

Endorsement by professional organizations such as AAHPER (local, state, and national levels), the National Institutes of Health, and the Parent-Teacher's Association would lend authority to the proposed physical education ITV program.

Once the farsighted physical educator or supervisor has obtained the backing of teachers, a preliminary statement of the objectives and scope of the proposed ITV series should be prepared for both school and ITV officials. This proposal should state (1) the need for ITV, (2) the level of instruction and number of students to whom the telelessons will be directed, and (3) the present state of affairs in terms of TV reception (how many TV sets are now available in the schools, how many would be needed to get maximum value from the telelessons). Notice that no mention has been made of costs. The reason for this is that the calculation of even a crude fiscal statement can be more efficiently handled by the superintendents of education, or their appointed advisory council members and the project manager at the producing agency.

Actually, physical educators can approach their local ETV or ITV station at any stage of the process and ask for advice and guidance. Where ITV already exists most school districts will have appointed a representative to an ITV advisory council which decides on such matters as (1) type and level of programming needed (e.g., elementary physical education, high school health education), (2) appropriations which their districts will allot for ITV, and (3) final program approval.

Guideline: Expert help is available at each step in the process of initiating physical education ITV.

The advisory council and project manager then meet to discuss the behavioral objectives of the proposed series, the framework, number and length of programs in the series, approximate costs, etc. When the project manager and the advisory council reach an agreement on goals, tentative costs, production date, and telecasting data, the executive producer starts coordinating the production with the television agency. Usually this agency is an ETV station, although this is not always the case. It may be an ITV closed circuit station located within a school district, the television studio of a college or university, a commercial station, or even a commercial television production agency.

In summary, the need for ITV physical education must be established and supported by a team consisting of classroom physical educators, directors or supervisors of physical education, directors of instruction, and the superintendents and boards of education of one or several school districts. Additional support in selling the program is necessary and should be sought from professional and lay groups. Support and professional guidance and advice are available to the person interested in developing classroom television regardless of his degree of television sophistication.

INITIAL PLANNING STAGES OF ITV SERIES

Budget

Budget items usually can be divided into production and administrative costs. Production costs usually consume approximately 60 percent of the budget while administrative costs account for the remainder. Included in *production costs* are such items as:

Studio facilities and engineering fees

Cinematography – filming done especially for the ITV program

Photography – costs for photographs taken especially for the ITV program

Scenic design – special scenes which need to be designed, constructed, and painted

Visuals – special art work and photographic slides

Properties – a movable object used to dress a set or used in the action of a lesson

Videotape

Screenings – the showing of videotapes of the program to select audiences

Dubbing – incorporating sound with a film

Pre-audio recording – audio recordings to be incorporated into the production, e.g., interviews with students, athletes, and experts

Clearances – permission which must be obtained from the agents of composers, writers, and film producers before their work or any segment of it may be reproduced on television. In some cases, there is a charge for such permission.

Administrative costs include:

Salaries – executive producer, studio teacher, production assistant-secretary, research-writer, etc.

Fees of consultants and guests

Travel

Evaluation of the program or series

Kinescopes, videotapes, and shipping

Printing and postage

ITV series, like computers, are less expensive the more they are used. An ITV series for one school of 300 students would probably be prohibitive in price. On the other hand, several small school districts could consolidate their efforts to increase cost efficiency. For example, the series *Health: Your Decision* cost around $20,800. The average cost of each production was between $1,000 and $2,000. Each program was 20 minutes in length, and the entire production consisted of 16 programs plus four remakes of programs judged to be of inferior quality.

Costs for producing ITV vary according to several factors. Gaither Martin lists six ITV systems from which to choose to suit one's particular budget and situation (3):

1. Instructional programs from local educational television stations

2. A simple television system with which to experiment in a few classes
3. A basic system that can be expanded in size and scope as the instructional television program is developed and new applications are defined
4. A system capable of providing television instruction in one or two schools, or for all the schools in a school district
5. A broadcast station facility for open-circuit telecasting to a specific area for instructional purposes

Other factors influencing the size of the budget include the costs of the items under administrative and production items. Cinematography is very expensive, e.g., around $200 to $300 per minute. Often a series of still photographs can meet the objective of film less expensively. Properties and sets which can be used repeatedly for a series are more economical than constructing new ones for each production. Salaries are a costly and difficult item upon which to economize. One should budget for the best that can be afforded. Although televised teaching offers many opportunities to improvise and economize, achieving a quality product takes top priority.

Staffing. Quality of the staff is directly related to the success of any program. At WETA-TV, an educational television station in Washington, D.C., a great deal of time is spent in locating high caliber talent. In nearly all cases, the television teacher is recruited from the classroom ranks. Usually he takes a leave of absence to assume the polymorphous role of talent, researcher-writer, and producer. A notice is circulated to the schools requesting that teachers interested in applying for the position do so by submitting a short script (which will include visual and audio components, sets, slides, and film clips) and a curriculum vitae. The next step is the screen test during which the candidate presents his script before the cameras. His performance, along with that of others, is evaluated by the television staff. A hiring decision is eventually reached and the new studio teacher begins the learning process.

At WETA-TV the novitiate studio teacher is given approximately a three-month training period before taping his first program. During this time, he becomes familiar with the technology of television and the role of each member of the television team (it is usually a humbling experience to realize that the floor crew are as vital if not more so to the success of a production than the white

collar members of the television production unit). He learns about the application of makeup. His diction, stage presence, mannerisms, and other personal traits are analyzed. He observes and talks with experienced talents, producers, and script writers. If he is responsible for writing scripts, he practices, receives criticism, and writes some more.

Then the day arrives when a practice script is presented for taping. This exercise is similar to an exhibition game before the official season begins. The talent sees and hears himself as he will come across to his viewers. The research-writer sees his script come to life. It is here, immediately following the first practice run, that the talent and/or the researcher-writer must be kept from self-destructive acts. With the passing of time and support from more experienced members of the team the novitiate's injured self-concept will be restored, and eventually, he will assume his proper role within the television unit.

This first production is usually a telelesson scheduled near the middle or end of the series so that it can be remade if necessary. Experience indicates that the first script usually needs some revision. Imagine the anxiety and confusions which might result if the first program of a series had to be retaped as the viewing date for the program approached.

Generally, the studio teacher works on a full-time basis. *The Primer for Television Teachers* offers this rationale (4):

> It is understandable that the classroom teacher, with all the various time-consuming duties he is expected to perform in the course of his job, cannot always do everything in the classroom that he would like to do under more ideal conditions.
>
> The television teacher is much more fortunate in this respect. He is given the time necessary to prepare all the materials which should ideally be prepared for the teaching of a given unit or lesson. He is also excused from the classroom teacher's daily housekeeping duties of taking attendance, reading messages, etc. As a result, the TV teacher's finished lesson should reflect the additional preparation he is given time for.
>
> In order to accomplish your objective of supplementing the material already being given the student in his classroom, you must bend every effort toward making your program as technically perfect as possible. This involves working closely with the director in order to take maximum advantage of the new approaches to education with which the medium of television provides you.

It is possible to hire a studio teacher who is not a specialist in health education provided his scripts are written by a professional in the field. This was the format for the *Health: Your Decision* series. After screening health educators it was obvious that a professional talent did the best job of presenting the prepared script. This individual was a part-time drama instructor at a local high school and a part-time disc jockey and television personality. Fortunately, he was so "simpatico" with the script and the objectives of the series that his enthusiasm, sensitivity, and professionalism carried over to the viewer. While this approach worked for a health education series it would seem to be an illogical approach for a skills oriented physical education format where, periodically, the studio teacher is expected to demonstrate.

The physical educator interested in developing an ITV series may be asked to audition for or participate in the hiring of talent. However, the television agency is primarily responsible for obtaining the services of all members of the production team.

Physical Education Advisory Council and Other Consultants. School districts contributing financially to ITV can expect to have a voice in establishing the goals, content, evaluation, and final approval of the programs. Generally, each school district will appoint someone to serve as its representative in the areas of physical education, health education, English, etc. In most cases, the person selected is the county or city supervisor for the particular discipline.

At WETA-TV, this group was known as the Health Education Curriculum Council. After each *Health: Your Decision* lesson, the council was credited with having approved the course content. This procedure lends support and validity to the lesson and is similar to an endorsement by a body of experts. Consultants from the National Institutes of Health, the American Psychological Association, and others were called upon frequently in a collaborative effort to upgrade the final product.

Guideline: Obtain validation for the telelessons from established professional sources.

Pilot Programs. Commercial and educational television run a pilot program of a contemplated series to determine who will view the program and to assess audience reaction and the production's weak and strong points.

Who should view the pilot programs? Certainly a sample of individuals who will be the target audience of the telelessons. How does one obtain a sample of the student and teacher population? Most schools are happy to select representatives for a viewing. However, most schools send their most interested teachers and best students. Since telelessons are aimed at a wide audience, it is wise to select the teachers and students randomly so that a truly representative group watches the pilot programs. Most school districts and state boards of education have research professionals who can suggest the best sampling techniques to use. Consultants and professionals from a variety of areas who might provide constructive criticism may also be invited. Two precautions are in order: be careful of inviting too many people, and evaluate the criticism. The production group must assess the validity and objectivity of all advice before acting upon it. While most people mean well and make valid contributions based on sound thinking and perception, others may be quite destructive or naive.

Guideline: Pilot programs can minimize future problems and maximize a quality product if they are structured properly and if critical comments of the program are evaluated carefully.

Preparing the Classroom Teacher. Regardless of the expertise of the classroom teacher, he will need some preparation to enable him to integrate the telelessons into his overall course format. Preparation of the teacher to utilize ITV may include teacher orientation, in-service training, and use of the teacher's manual.

Orientation—One or several telecasts should be devoted to familiarizing the teacher with the objectives, procedures, and format of the telelessons. On the basis of orientation programs, it is often possible to predict those lessons which may be difficult or controversial. For example, a telelesson on human sexual behavior or drug education can be predicted to arouse anxiety in some viewers. These anxieties can be reduced if the teacher knows what to expect and is comfortable with the subject. For example, one problem in teaching sex education is the language barrier which prevents effective communication (1). If the teacher feels at ease in using the language of sex (even medical terminology such as penis, vagina, and breast can arouse feelings of discomfort) so that his students do not perceive him as being embarrassed, his teaching will be facilitated appreciably.

A physical education telelesson involving a stunt as fundamental as a forward roll might be perceived as threatening by a parent. A parent who has never experienced the stunt or was the victim of ineffective teaching might feel uncomfortable should the stunt be part of a telelesson. Is there any way of reducing such irrational sources of potential opposition to a series? The orientation telelesson can suggest methods of coping with problems of this nature. Classroom teachers should be made aware that telelessons are a supplemental teaching aid designed to serve in any way that they see fit. They have complete control of their environment simply by their ability to tune in or out the telelesson.

Segments of future telelessons may be shown during the orientation telecast to give teachers an idea of future expectations.

Guideline: Orientation programs can be very worthwhile for classroom teachers by clearly setting forth the objectives, describing the format, and preparing them to cope with any predictable exigencies resulting from the telelessons.

In-Service Training—The physical education series can be used as the basis for in-service training for teachers. Experienced physical educators are interested in learning new content and methods. For the classroom teacher who is not a physical educator, the in-service program helps him gain a sense of mastery over subject matter which is unfamiliar to him.

Teacher's Manual—An integral part of the ITV series is the teacher's manual. Traditionally, the manual consists of (1) an introductory statement explaining the behavioral objectives of the series, (2) identification of the studio teacher and the researcher-writer (if they are two different individuals), (3) a description of each telelesson's objectives, (4) suggested pre-telecast, telecast, and post-telecast activities and follow-up, and (5) vocabulary lists and selected references, when appropriate. Some manuals provide a means of evaluation to be submitted by the classroom teacher and his students to the studio following each telelesson. This may be a postcard with a checklist or rating scale, and space for comments.

The size and comprehensiveness of a manual vary. The tendency at one studio, WETA-TV, has been to aim for brevity. Teachers find it tedious to wade through volumes of written material. One written page or less for any lesson should suffice.

The manual should be viewed as a guide, not as a model to be followed rigorously. Too often the purpose of the manual is misconstrued and difficulty arises when the classroom teacher fails to improvise to suit his own unique situation.

Guideline: The classroom teacher, regardless of his proficiency and expertise as a physical educator, needs some degree of orientation on how to integrate the telelessons into his particular classroom teaching situation. Furthermore, ITV can serve as a medium for the education and training of teachers (and other members of the community) if so desired.

CONCLUSION

One purpose of this chapter has been to reduce some of the apprehensions that a classroom physical educator (or health educator) might face should he wish to implement physical education ITV. Perhaps the greatest obstacle will be in overcoming inertia. However, once a physical educator makes his intentions known, others will usually join to help in the project.

In the opinion of the authors, both of whom have been classroom teachers, the experience of working in ITV is enlightening, educational, hectic, nerve-wracking, and above all, fun. Once, after watching the windup to a particularly different telelesson and the subsequent physical collapse of the production team, a colleague remarked, "Sweat and strain to put it 'in the can,' boys." Once "in the can," your work is there for all the world to see. It is your book, your play . . . a result of your creativity. The fun of it is in the working and learning with a talented group of people in an exciting new medium of communication.

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CHAPTER 3 PRODUCTION OF THE TELEVISION SERIES

Ruth White Fink

When planning the production of programs in physical education certain basic factors must be considered. These include (a) the selection of the site, (b) audio aspects of programming, (c) video aspects, and (d) miscellaneous items.

SITE

Instructional television programs in physical education have originated in gymnasiums, elementary school classrooms, multi-purpose rooms, TV studios, on playing fields and courts, and even on snow-covered fields. There are certain minimum requirements as far as the site is concerned. Space requirements, floor surfaces, overhead obstructions, boundaries, and accessible physical education facilities are of major importance. There must be careful, imaginative planning with subsequent adjustments in what are usually considered to be minimum requirements for physical education instruction in regard to space, size, and utilization of facilities.

Although the television studio may offer the least space of all the areas listed, it provides a site which offers the best in audio and video technical aspects, and a consistent base of operation which provides a sense of security for the TV teacher and viewer that would not be true in a situation where casual spectators, extraneous noises, and varying temperature and light conditions may detract from the teacher's ability to concentrate on the many facets of the television operation.

Listed below are basic considerations for adapting the TV studio for physical education instruction.

Floor Space. With careful planning, most physical education demonstrations may be conducted in the studio. Skills, individual techniques, teaching methods, and testing procedures may be demonstrated in very small spaces. In an area as small as 10 feet by 10 feet, small groups of children may perform many activities. Actually, large groups of performers do not present an instructional

situation, while small groups in small spaces provide a focus on the learning aspect. The camera does not portray actual space or size. For example, lowering a backboard, decreasing net height, or shortening the playing court does not interfere with viewers' comprehension.

Overhead Space. The overhead area of the television studio is limited by lights, beams, and technical equipment. This means that the flight of balls and other objects may be adapted to the limitations. The use of plastic sports equipment, "fluff" or yarn balls, and soft rubber balls is helpful because the flight is slower, the picture is better, and the potential of injury to performers or to studio equipment is less. Nets may be lowered below regulation height without causing a picture distortion.

Floor Surface. The floor surface of the television studio is often of concrete, tile, or other material which may be slippery for performers when running or jumping. Slipping can be minimized by applying powdered rosin to shoe soles. If possible, a non-skid floor covering should be available for the physical education area. Floor standards may be anchored temporarily with sandbags in the absence of floor plates. Lines denoting the studio stage boundaries and playing court areas may be made with plastic tape. Lines denoting "out-of-bounds" to all performers should be used to protect studio curtains and other props.

Guideline: Because of space requirements for physical education programming, imaginative planning is necessary for functional and safe selection and utilization of the site.

AUDIO PRODUCTION

In physical education programming, many sounds are transmitted by the microphone. These include the bouncing of balls against walls or floor; the striking of bats, paddles, or rackets; footsteps; the clapping of hands; the music of recordings or of children singing; the spontaneous laughter or exclamations of children; as well as the reverberation of all of these sounds from studio walls. The problem is to separate the desired and innocuous sounds from the extraneous and disturbing ones in order to transmit a picture accompanied by appropriate sounds.

Microphone. The choice of the microphone in order of preference would be: (1) transistor or wireless mike, (b) sound boom, (c) "necklace" or "lavaliere" mike, and (d) hand mike.

The transistor mike allows fairly free movement without entangling the cord, as does the traditional necklace mike. Although the sound boom requires additional studio personnel for its operation, it is effective to use when the voices of studio performers are desired from different angles at one time. The hand mike is undesirable in any situation where other objects are to be handled, although it may be used when attempting to muffle wind sounds when the program is conducted outdoors.

Suggestions for use of the wireless or lavalier microphone include the following:

(a) Keep the head fairly erect when talking; do not talk "into the ground."

(b) When speaking to a child, stoop to his level rather than look down at him.

(c) Do not stand close to a wall while speaking; vibrations are picked up by the mike.

(d) If turning (to write on a chalkboard, for example), turn slowly if you are speaking, as your movement may distort the sound.

(e) Remember that a mike will not carry both voices in a conversation. Use two lavaliere mikes or the sound boom if there is to be much conversation.

Voice. The voice of the television teacher deserves considerable attention. It should be a normal conversational tone, neither too soft nor too loud and strident, and should not vary greatly in intensity. The physical educator who is accustomed to teaching in a gymnasium or on the playing field may find that he tends to emphasize certain words or phrases by speaking louder. This practice is undesirable in television because his voice may bombard the listeners. He should practice giving emphasis by the use of appropriate pauses, by careful selection of cue words, and by other methods discovered by trial-and-error practice during camera rehearsals.

Diction. Special attention must be given to diction and enunciation, with the thought in mind that students in the classroom cannot ask

that a sentence be repeated. Teachers preparing for their first TV appearance should study the speech of people who appear regularly in national educational or commercial television—not for purposes of imitation, but to listen for pacing of the talk, level of sounds, and word choice. If TV programs are to be taped and distributed beyond local areas, regional speech mannerisms should be avoided as much as possible.

Vocabulary. Educational television presents an unusual opportunity for increasing the vocabularies of children and youth. Although the TV teacher's vocabulary should be appropriate to the audience, he should not "talk down" or use the same trite words and phrases week after week. Physical education and language arts instruction may be integrated in the elementary school when the TV teacher utilizes every opportunity to add appropriate new words, giving correct pronunciation and oral definition, and by writing the word or phrase on the chalkboard, or by displaying it in a graphic. The teacher may ask the children to repeat the words after they have been pronounced. In addition, physical education terms applying to human movement should be experienced kinesthetically. Thus, the terms "hopping," "jumping," "stretching," and "folding" should have meaning within the bodies of the children as they view the TV program.

MISCELLANEOUS SUGGESTIONS

(a) All performers should wear soft-soled shoes in the studio to decrease extraneous noise.

(b) Demonstration groups of pupils should be asked to keep their voices at a moderate level if they laugh or talk, unless it is important that their remarks be heard as a part of the program. Background sounds of a happy activity are not usually disturbing.

(c) The TV teacher, in cooperation with the studio staff, should explore ways to muffle the noise of balls striking floors or walls, especially if it interferes with the teacher's voice.

(d) When musical accompaniment is needed for dance or other activities, records with a "lead in" should be used if possible. If not, the music should be taped in advance.

Guideline: The production of desired sound and elimination of extraneous sound require experimentation and practice if educationally valuable programs are to take place.

VIDEO PRODUCTION

Physical education is a "natural" for television because it denotes activity and movement in contrast to a lecture-type format. Therefore, TV instruction in physical education should utilize activity and demonstration and minimize the amount of time devoted to talking. One of the few professional assessments of television programming in physical education has criticized the programming in saying, "The materials did not utilize the medium; television usually served as a carrier to transport the teacher. Talk crowded the lessons. There were too few visuals, film clips, and demonstrations. Neutral backgrounds, poor camera angles, and unsuitable clothing for teacher and demonstrators detracted from the productions" (1).

General Video Aspects

(a) Space should be used wisely. While it may be interesting to watch a group of 40 children performing stunts, this does not provide an instructional situation. The camera must be able to focus on each facet of a movement sequence.

(b) Attempts at projecting an entire team sport are usually very difficult in the average instructional TV situation. This would require more cameras and technical staff than are available for educational programming. Film clips, introduced appropriately, may provide a better instructional picture.

(c) Experimentation is needed with the video aspects of moving balls and other equipment so that best results are attained. Painting stripes on balls, applying a coat of liquid wax on shiny gymnastic apparatus to reduce glare, and drawing temporary lines and other floor markings to keep performers in camera range are recommended.

(d) Experimentation with appropriate height for nets and with length and width adaptations for courts may produce an improved TV instructional picture.

(e) The use of camera rehearsals to study the appearance of moving people and objects, and to determine appropriate camera angles to display individual body movements or floor patterns will enable the television teacher to provide a better teaching situation. The TV teacher and the studio's technical staff must work together in determining the aspects of an activity which should receive special camera emphasis. This may involve close-up shots of movements or superimposed ones of a composite activity in which two cameras are used simultaneously.

(f) The movements of the TV teacher must be carefully planned so that he does not move "across camera" or detract from pupil demonstrations.

Dress

(a) The dress of the TV teacher should be appropriate to the activity and purpose of the program.

(b) Sharp contrasts in color should be avoided. Light colors, blues, grays, and browns are usually effective on television. White tends to give off reflections.

(c) Women should not wear large rings, bracelets, or earrings because they reflect considerable light. Metal or plastic buttons on the front of clothing may cause extraneous sounds if a microphone brushes against them.

(d) Glasses may be worn, but to minimize reflections, they should be washed with soap and water just before going on-the-air.

(e) It is unnecessary for the studio teacher to wear TV makeup. However, women may select a medium-to-dark shade of pancake makeup to be applied evenly over the entire face. An eyebrow pencil and medium-to-dark lipstick may be used. Light red or orange lipstick shades are undesirable. Men may wish to apply a small amount of talcum powder to the forehead, nose, and cheekbones to decrease shine.

(f) The dress of demonstrating pupils should be appropriate to the activity performed and circumspect for what the camera "sees". Rubber-soled shoes with laces well tied will prevent falling. Shirts, shorts, and other attire should be checked just prior to "air time" to insure that there are

no ripped seams, missing buttons, or broken zippers, and that freedom of movement is possible without untoward incident, especially when young children are in the demonstration; older children may be reminded about a self-check of clothing.

Teacher Demonstration. There is a variation of opinion concerning teacher demonstrations on-the-air. While the TV teacher may be the most skilled performer, pupil performance, especially at the elementary level, presents a more natural situation for the peer group in the classroom. In vigorous demonstrations, the TV teacher may find that his voice becomes husky or labored when he tries to demonstrate and talk simultaneously. Television tends to amplify sounds associated with breathing. If the teacher does give a demonstration, it is preferable to film it without sound, and then present it as a film clip with the teacher commenting on-the-air.

Pupil Demonstration

In selecting pupils for on-the-air demonstrations, certain questions arise. Should the demonstrating group represent a cross section of a wide range of skill and intelligence which would be typical of the average classroom, or should it represent the average or above-average pupils? Which will have the greater educational impact on the majority of viewers? The latter is probably the wiser choice, especially since it is difficult to predict the on-camera performance of children who have learning disabilities or difficulty with motor performance.

Visuals

Physical education programming has been criticized for its failure to use visuals—charts, diagrams, photographs, film clips, etc. These add a dimension of value in presenting court diagrams, floor patterns of dance or sports, game strategy, rules, and the vocabulary of physical education. The following suggestions are recommended in regard to the preparation and use of visuals:

(a) The amount of material which can be "read" by the camera without the print or lettering being too small to be legible must be determined by experimentation. A few well chosen words are more meaningful to viewers than complete sentences or long lists. The teacher should reinforce the information in the visual with appropriate comments.

(b) Black lettering or diagrams on a gray background provide the best graphic from the standpoint of legibility; a white background is not recommended. Lettering should not extend closer than two inches from the edge of the graphic.

(c) Since the camera tends to project the vertical size of illustrations in a ratio of three units to four units of horizontal size, graphics should be constructed with this relationship in mind.

(d) Posters, charts, and photographs may be placed on an easel for best shots, a pointer being used to direct the view to specific items on the graphic. If the teacher holds the object, such as a photograph, it should be tilted slightly toward the camera and held motionless. Sufficient time should be allowed for viewers to look at the object(s) displayed, although long pauses without comment become monotonous.

(f) Whenever visuals are to be used, the teacher may "lead" the camera to the subject at the appropriate time. This may be done by prearranged signal or by a simple comment, such as "Let's look at this diagram." If cues have been arranged in advance, visuals may be done "in limbo"—that is, focusing a second camera directly on the object concerned in close-up, with the object actually off-stage.

(g) If film clips are planned as part of the program, permission for their use should be checked in advance. Some film agencies do not allow the use of their films on television without the payment of a special fee and written permission. Since films tend to become outdated in regard to dress, changes in sports rules, etc., all films should be previewed and analyzed for their value in information and motivation.

(h) Since advertising is not permitted on educational television, deliberate display of specific products or mentioning of trade names must be avoided; however, incidental appearance of specific trade products cannot be avoided entirely. For teacher in-service programs, the audience may be invited to request information on specific products by mail.

(i) If the teacher wishes to have a "monitor set" on stage, it should be out of the viewing range of demonstrating pupils.

The teacher must not allow himself to "talk to the monitor." Whenever possible, he should address himself to the "red eye" of the camera – then he is talking directly to every viewer.

Guideline: Televised physical education programs should emphasize movement and demonstration, with oral instruction kept at a minimum.

MISCELLANEOUS SUGGESTIONS

Rehearsals

Two kinds of rehearsal are recommended: the off-camera "dry run" for the teacher, and the on-camera rehearsal for the benefit of the technical crew. Although additional rehearsals would be valuable, they are not usually possible.

Follow-up Conference

A conference immediately following each televised program involving the TV teacher, studio director, and technical staff is vitally important. A discussion of errors to be corrected, problems encountered, and a recognition of the unusually good aspects of the program will assist the teacher in planning future programs.

Pacing the Program

This involves determining in advance the approximate time to be used in each segment of the program, including the introduction, the various portions of the actual activity, and the provision of adequate time for closing without haste.

The teacher should become familiar with time cues, which may be hand signals, flip cards with numerals, or other methods. Cues indicate such items as on-the-air; time remaining in modules of 10, 5, 2, 1, or ½ minutes; and stretch or cut. Although the teacher cannot react visually to these signals he must learn to respond to them. He should also realize that the cameras may be on him at any time until he is told, "We are off the air."

Planning for Emergencies

In physical education programming, emergencies often occur. These situations might be balls rolling off-stage or lodging in camera supports, children wandering away from the stage, objects

being entangled in overhead lights, unexpected breakage of physical education equipment, or injuries to performers. The TV teacher must not panic in such situations, but should be prepared with spare equipment and be able to ad lib about rules, strategy, safety, etc. while repairs, recovery, or first aid are accomplished. Occasionally, a teachable moment will arise out of an emergency.

In the matter of "memory" aids, the following are suggested: an off-stage chalkboard, an outline of the day's activities on an easel on-stage, key words chalked on the studio floor, a set of cards with principal items in large letters hung below the lens of the TV camera, and occasionally, notes.

Script

Although good teaching does not involve the use of notes on-stage, an outline script or "run down" is important in assuring that proper equipment and facilities are at hand, and to provide the technical staff with a plan of the program. The script for physical education programming should include a list of the activities in sequence, approximate times, recommendations for special camera shots ("up tight," "super," "pan"), a plan for the audio aspects (including the scheduled use of records or other special sounds), a list of special visuals (including timing for film clips), and a general breakdown of each segment of the program.

Guideline 4: The physical education teacher should be involved in creative program planning and be able to cope with emergency situations.

CONCLUSIONS

Creativity is needed in educational television, and physical education programming calls for much experimentation and imagination. We have not begun to experience all of television's vast possibilities as an exceptionally versatile tool. However, television must remain the tool, the technique, the medium, for, in itself, it does not teach or educate. The TV teacher, the technical staff, the viewer, and the researcher must all plan, create, experiment, and evaluate accordingly if educational television is to reach its potential.

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CHAPTER 4 UTILIZATION OF TELEVISION IN THE CLASSROOM

Fay R. Biles

The value of a television series depends to a great extent on the classroom teacher. When the classroom teacher tries, experiments, and explores, instructional television becomes a challenging experience. When telelessons are presented several times a week, changes in the classroom routine become necessary. The teacher gives up a bit of autonomy in exchange for becoming a member of a more powerful educational team. His responsibility extends from the planning stages to setting the psychological atmosphere for all learning that is to take place within the classroom. His attitude toward television and his efforts to become a participating team member may determine whether the potentiality of a telelesson is fully realized.

The guidelines offered here are concerned with helping the classroom teacher utilize television. Many educators lack a knowledge and appreciation of the possibilities of ITV. Generally, as teachers gain more understanding of the medium of television, its programming, goals, capabilities, and limitations, they become more willing and excited about using this educational aid.

Television research studies show that positive thinking and action by teachers and students play an important role in meeting the objectives of telelessons. In order for students to assume positive attitudes, it is necessary for the teacher to display his enthusiasm for the telelessons. Students, when guided by a positive attitude toward educational television, learn quickly that the roles of the classroom and television teachers are radically different but complementary. The classroom teacher is the manager of the learning situations while the television teacher is responsible for presenting material in an authoritative, efficient, and effective manner.

Guideline: Students tend to reflect the teacher's attitude toward ITV.

In the teaching-learning situation, the television team of specialists is dedicated to presenting the most effective lessons possible. Be-

cause team effort is involved, the classroom teacher surrenders some autonomy for the advantages of team planning, better organization, and new ideas. When used as a major resource, television assumes the main burden of telling and showing, supplementing or enriching conceptual material, thus freeing the classroom teacher for more individualized instruction and group learning activities.

The classroom teacher is the professional member of the team who supervises the teaching-learning climate and arranges the most appropriate learning situations to achieve desired objectives. He needs to use all available resources to individualize instruction for meeting the needs and interests of his students whom he knows personally. He is aware of their growth, progress, and individual problems. The classroom teacher is the one who provides the laboratory experiences for developing creativity and problem solving. He helps students to apply generalized concepts in the process of reaching conclusions to be used, hopefully, in behavioral changes.

Guideline: Only the classroom teacher can provide the vital personalized and individualized approach to teaching and learning

Several important team decisions depend on the classroom teacher's judgment. The first decision to be made is how television will be utilized in the classroom, whether it be the gymnasium, swimming pool, or dance room. In physical education, television can be used in the following ways: as total teaching, as the major resource, as supplementary material and general enrichment, in a self-instructional laboratory, and as other possibilities.

1. *Total teaching.* In this case, television presents the entire study course. Classroom proctors check attendance, regulate television sets, and answer questions. Where there are too few physical education teachers or none, total teaching can bring physical education into classrooms where, otherwise, none would exist. Classes in college professional curriculum as well as those in movement exploration, sports, and dance are possible with total television teaching. Although some of these possibilities are already a reality, all could be explored.

2. *Major resource (Direct teaching).* Usually there is a series of lessons in which the presentation of content is provided by the

television teacher. The classroom teacher establishes the stage by attitude setting, completing preparatory arrangements, arranging the environmental situation, and performing follow-up functions. The classroom teacher is the manager of the learning situations and a counselor of learners while the television teacher is responsible for telling and showing.

3. *Supplementary material and general enrichment.* The classroom teacher provides most of the teaching but uses television for supplementary materials. Under certain circumstances, television can bring opportunities into classroom teaching that classroom teachers could not ordinarily provide. Demonstrations, image magnification, and interviews add to the classroom teacher's presentation.

Watching a program that supplements a lesson or focusing on a current event that will enrich students' lives is perhaps the most flexible way of utilizing television. Many ETV stations have tape libraries containing single tapes of unusual events in sports history and interviews with outstanding health and sports figures.

Enrichment usage of television includes in-service programs designed for teachers who are unfamiliar with a subject or who want to refresh their own methods of teaching. There are other types of television usage in which "bits" are produced as single telelessons in a non-series to meet the particular needs of a school.

4. *Self-instructional laboratory.* Instructional television can be used in a laboratory setting where the space and materials necessary for each student to learn at his own rate are provided. Concepts, information, or skills for a course are televised and the videotapes are available to the student. The teacher provides the opportunity, but the student must supply the motivation. In some self-contained classrooms, a TV system—camera, videotape recorder, and monitor—offers exciting opportunities for teaching a great variety of skills.

5. *Additional possibilities.* Schools and colleges may produce television tapes for interinstitutional sharing of courses. Exchange of programs by means of videotape is entirely feasible.

Microteaching can be used to improve the quality of teaching for both classroom teachers and student teachers. To see ourselves as others see us is indeed granted by television.

Open-circuit TV courses for college credit is a present reality. Courses may be attended at home or in a residence hall by campus enrolled students, thereby permitting economical use of classroom facilities.

Guideline: How ITV is to be utilized is most important and careful thought should be given to different methods available: total teaching, major resource, supplementary and enrichment, in a self-instructional laboratory, and other possibilities.

The success of a locally produced ITV series depends upon its utilization by the classroom teacher and the students, and the effectiveness of the television teacher's presentation. First in importance is the interaction between the two teachers who will be cooperating to produce the series. The following steps are suggested in establishing good communication between them.

1. The television teacher and a representative group of classroom teachers should meet to:
    a. Clarify goals.
    b. Decide upon the curriculum and structure it so that key concepts are presented effectively.
    c. Determine the scheduling of specific days, time, and length of the telelessons.
    d. Select the type of format to be used – lecture, problem solving, demonstration, open-ended.
    e. Share constructive suggestions – "I've tried it in the classroom, it worked well. Why don't you try it on television?"
2. At least one month before the first lesson is televised, the classroom teacher should be given:
    a. The completed calendar of dates, time, etc. so he can make plans for field trips, films, or other resources.
    b. A detailed manual which includes –
        - The objectives of each lesson
        - A detailed outline of the content
        - Suggested activities for before, during, and after the telecast
        - A list of resource materials.
3. Evaluation procedures should be planned in advance: feedback cards with reactions from the classroom teacher and students, visits to the classroom by the television teacher, and final meet-

ings to discuss evaluation. If a series is not produced locally, classroom teachers can send their comments to the originators of the teletapes. A record should be kept of reactions to each series so future planning can be based on past evaluations.

Guideline: Establishing good interaction between the television teacher and the classroom teacher is vital.

Because TV viewing conditions should be as ideal as possible, the environment surrounding the learning situation is extremely important. The learning environment for television utilization is often determined by how carefully the teacher plans seating, lighting, and background glare. The following suggestions should be considered carefully each time a telelesson is provided.

Classroom Viewing Conditions

The receiving set or monitor is important because it transmits the telecast. Research has shown that the following practices produce the greatest efficiency.

Size—For an average size room, two 21 or 24 inch screens are recommended, preferably the 24 inch size. On a 21 inch screen, 15 to 20 students may view a program; on a 24 inch screen, 20 to 25 students may watch. Two sets are recommended in case of receiver failure.

Television Receiver—A good receiver has quality front speakers, bonded safety glass, controls on the front or side, and possibly extra speakers.

Distances—Receivers should be raised about five feet off the floor. Students should be seated approximately six to eight feet from the sets. Maximum sitting distance from the set is usually 12 to 15 times the screen width.

Placement—Receivers should be placed at an angle near the window wall of the room. Curtains behind the set should be drawn to eliminate glare.

Mounts and Stands—Although permanent mounting is preferable, it is not usually possible in physical education classes. In newer buildings, television planning is often completed during the blueprint and construction stages. Mountings that can be used include: ceiling mounts with angle and tilt features, adjustable mounts

where sets can be pushed toward the ceiling (pantograph type), and wall brackets which allow sets to be turned toward the class when in operation. All mounts should allow for a slightly forward tilt. Moveable mounts or stands should have rubber wheels.

Angle of Viewing—The viewer's line of vision should never be more than 30 to 45 degrees off center. To keep all students within the recommended 30 degrees viewing angle without wasting space, the viewing area should resemble a cone, as shown in Figure 1.

Guideline: Attention to size, type, and placement of television receivers improves the environmental setting for reception of the telelesson.

Classroom teachers should be cognizant of their role in the care and maintenance of receivers. When failures occur, proper personnel should be notified immediately. One person in a building can be designated to report to the communication source and send in a written report describing the cause of failure (no sound, no picture, "snow" on the screen). To facilitate repairs, sets should be numbered and the room number and location of the sets should be readily available.

If receivers are moved from one room to another or out of the building, they should be checked carefully prior to the first telecast upon return. Screen fronts should be wiped often with a moist cloth to remove dust and dirt particles. Rules should be established concerning the care and use of receivers.

1. Proper tuning techniques can be demonstrated by television personnel or distributed in written form.

2. Students should not be permitted to walk behind the sets where cables or electric wires are attached. Tripping on cords is dangerous to students and can immobilize a set.

3. Students should not walk in front of sets while telecasts are shown. When several classes meet in one gymnasium, and if the students must pass through the gymnasium in leaving, teachers should provide for exit paths behind classes or synchronize class time so all classes end simultaneously.

Guideline: Classroom teachers are expected to enforce rules for proper care and usage of television receivers.

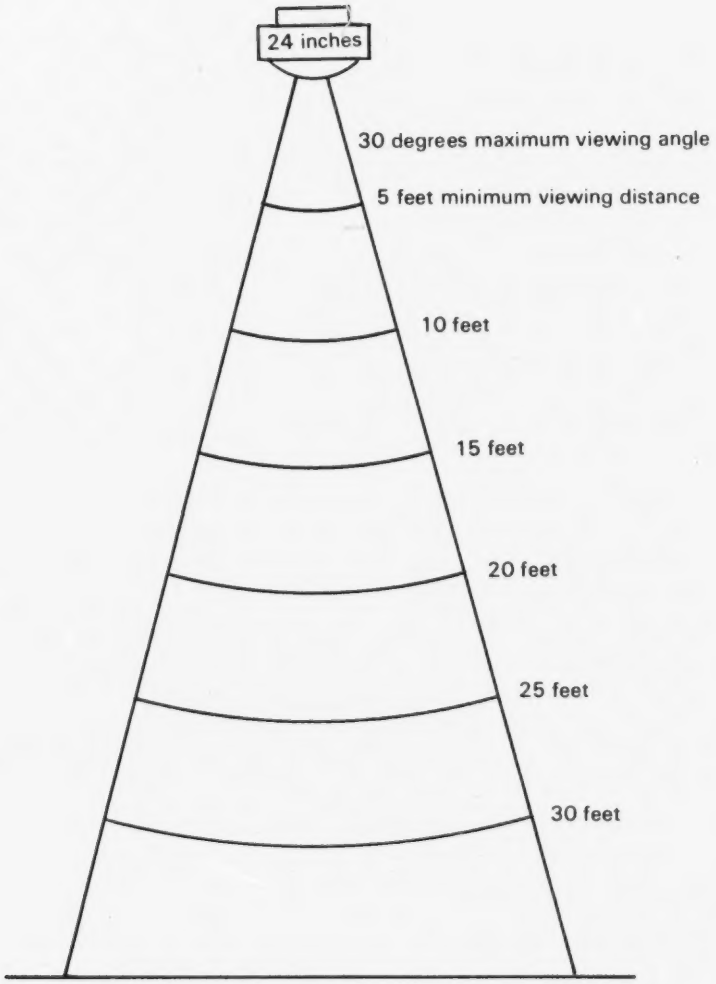

Figure 1. Television Receiver

Specific plans should be completed before, during, and after telecasts. The following suggestions are presented as general guidelines and each situation is unique to the particular environmental setting.

Before Telecast

1. Use the teacher's manual, pupil workbooks, and other resources that help to clarify the content of the lesson. Adopt the objectives that meet the students' needs, know the concepts to be covered during the telecast, and *plan* for interaction following the telecast. Be prepared for any emergency that necessitates your assuming the television role.

2. Before class, make arrangements to have all equipment available.

3. During the first few minutes of class, turn on the television receivers to allow them to warm up, select the proper channel, adjust the fine tuning, and check audio control (a picture tube does not operate at peak efficiency in less than five minutes).

4. During these first few minutes, develop pupil interest in the lesson to be viewed. Motivate students by raising questions which the telecast may answer. Do not teach the same content that will be presented on the telecast.

5. Review key words that will be used—write them on a chalkboard or post them on a bulletin board so students can refer to them before the telecast.

6. Arrange lighting and seating according to accepted criteria (see page 55).

Guideline: Carefully planned interaction between the classroom teacher and students helps create a suitable learning environment.

During the Telecast

1. Be an attentive, interested viewer. Students will emulate your attitude and behavior.

2. Be alert to the students' needs, making sure they see and hear well. Meet emergencies of students—a broken pencil, late comers, disturbances.

3. Sit about midway back at the side of the class so you can see all students and they are aware of your presence.

4. Watch the telecast and student reactions. Never leave the room, correct papers, or socialize during the telecast.

5. Always take notes on items in the lesson for: needed emphasis, clarification, differences in terminology, questions that might be raised, or experiments to perform.

6. Ask students to take brief notes when appropriate. Teach note-taking skills (using codes, abbreviations, outlines) before using a television series.

7. Emphasize listening skills and stress *active* watching.

8. Adjust receiver when necessary and become proficient in making critical picture adjustments; if feasible, delegate these responsibilities to students.

Guideline: The classroom teacher plays an active role in setting attitudes by becoming a behavioral model during telelessons.

Post-Telecast Activities

1. Turn off sets and return immediately to regu. environment (lights, seating, etc.).

2. Opening dialogue should be a thought provoking statement or question that focuses attention on one of the main concepts of the lesson.

3. Opening activity can be a quick appraisal by the students and teacher to decide which areas need to be reviewed, clarified, strengthened, or expanded.

4. Never ask students, "Well, did you like the lesson?" Would you ask that of any of your own lessons?

5. Prepare follow-up activities by:

   a. adding to or extending the content of the lesson

   b. panel discussion

   c. reports

   d. role playing

e. quiz sessions

f. problem solving

g. assigning outside projects

h. small group discussions or buzz sessions

i. recommending other related programs for students to watch (if there is a local ETV station)

Guideline: Carefully planned post-telelesson activities relate concepts to classroom discussion and enhance the learning environment.

In the final analysis it is the classroom teacher who determines the impact that television will have in the teaching-learning process. The way television is utilized may determine if the objectives of the lesson are met and if the conceptual materials will be retained. Accurate teacher self-evaluations are valuable if optimum conditions accompany each telelesson.

The classroom teacher and the television receiver can be compared to a prism through which information flows and appears on the other side, sparkling and full of meaning depending on how brightly polished the prisms are. The most important aspect of this sparkle will be the effectiveness of the teacher's meaningful interaction with the students.

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CHAPTER 5 EVALUATIVE METHODS AND THEIR UTILIZATION

Bob McLaughlin

To use instructional television is to participate in a teaching team. The team includes the school administration, health and physical education personnel, program control center staff, curriculum specialists, classroom teachers, and the television teacher.

All members of the team can profit from continuous and thorough evaluation. The member who usually profits the most from evaluative results is the television teacher, whose strengths and weaknesses most directly affect the telecourse. He must be able to cope with and profit from almost constant evaluation. He is critically observed during the preparation and presentation of each telecast.

STUDIO TEACHER SELECTION

To meet the challenges and standards of teleteaching, a teacher must possess certain distinctive characteristics. Usually, school systems select a studio teacher from the teaching ranks. Selection criteria vary greatly, but generally studio teachers are chosen because they have:

successful teaching experience

thorough knowledge of the subject

ability to communicate

creativity

good work habits

desire and aptitude to work with others

sense of humor and enthusiasm

good grooming

ability to change and improve

prior television experience

Successful teachers of health and physical education usually possess many of the traits listed. However, the teacher selected for television teaching must also have the ability to:

write teacher guides

prepare the format for the telecast

teach in front of a camera

communicate with viewers as individuals

teach with visuals

anticipate reactions and concerns of students viewing the telecast

The TV teacher has many responsibilities. However, supplemental help is provided by additional team members not previously listed. They include resource people, artists, photographers, and secretaries.

EVALUATIVE CONSIDERATIONS

The uniqueness of television allows observation of the studio teacher by members of the team, students, friends, and relatives. The teacher should welcome criticism from these sources and be able to categorize these critical comments, many of which will pertain to the following considerations:

1. Do the lessons provide resource people, outstanding visuals, and vicarious experiences through field trips that are unfeasible without television?
2. Is each lesson a springboard for new learning opportunities?
3. Do the broadcasts present new ideas, teaching techniques, and materials to classroom teachers?
4. Is the presentation paced properly to allow for development of concepts that attain and retain students' attention?
5. Does the material provide challenges for pupils of varying interests and abilities?
6. Is the lesson planned to obtain overt responses from pupils during the telecast?
7. Does the telelesson teach what it is supposed to teach? (Validity)
8. Does its effect last over a period of time? (Reliability)

EVALUATIVE CRITERIA

Many tools are available for a relatively simple, practical evaluation of the telecasts and the studio teacher. The methods described will not be in order of importance. A method that is extremely useful in one school system may be inappropriate in another.

Appraisal Committee

Teachers of different ethnic and socioeconomic groups representing various schools may be asked to serve on a committee to observe and evaluate telecasts objectively.

Various feedback methods may be used by the committee. A common method is to submit individual written reports after each telecast to effect change during the series. A summary report is usually given by the appraisal committee in addition to the periodic reports.

Another feedback method involves a combination of written and oral reports to allow for two-way communication between the studio teacher and the committee.

Feedback Cards

Classroom teachers using a TV series may be asked to submit evaluation cards periodically to the health and physical education department. These signed or unsigned cards are extremely useful for measuring the pulse of the telecast and the studio teacher's effectiveness.

A feedback card usually contains a checklist and asks for one or two suggestions or criticisms. A feedback card should require little time for the classroom teacher to complete.

Ratio of Viewers

In large school systems, telecasts of health and physical education are usually not required viewing but rather are watched on a voluntary basis by teachers and physical education specialists. When this is the case, an annual survey may be taken to determine the percentage of eligible teachers watching the telecourse. The percentage gain or loss in number of classes from year to year will help to indicate interest in the broadcasts.

Exposure to Other Professionals

If videotapes or kinescopes are available, they should be given as

much exposure as possible so that health and physical education professionals throughout the country may gain expertise from one another.

AAHPER provides for this type of exposure annually through the Committee of the Utilization of Television in Physical Education. The committee makes the arrangements for AAHPER national convention delegates to view broadcasts of selected lessons from televised courses in health and physical education from schools and colleges throughout the nation.

An arrangement between two or more studio teachers from different cities to exchange and evaluate the tapes or kinescopes is another excellent way to gain practical information for improving telecasts and teaching techniques.

Formal Research Methods

Over 500 research projects have been completed concerning the worthiness of instructional television. However, more hypothesis testing and multidisciplinary investigation needs be done to determine the best means of utilizing this powerful medium.

If an accurate validation of a telecourse is required by a school system, reliable evaluative tools are available and should be used. Research personnel should be consulted and given the responsibility for conducting any formal studies.

Group Reactions

Television personnel should arrange meetings periodically with teachers and pupils who view the telecasts. Viewing clients are more inclined to be frank in terms of constructive criticism when they are part of a group discussion. Topics also arise from group meetings that might not come to the surface if the television teacher asks a teacher or a student for suggestions or criticisms directly.

Individual Conferences

In some instances, individual conferences may be more productive than a group meeting. For example, following the completion of each telecast, the program director and the television teacher should meet to discuss ways to improve future presentations and utilize the TV teacher's attributes more effectively. Their discussion may include such topics as:

presentation of ideas

use of visuals

preparation of telecast format

cooperation between studio teacher and technical staff

continuity and flow of the telecast

The television teacher can gain one of the most valid insights into his effectiveness by keeping communication channels open with his co-workers. They, in turn, should be aware of their responsibility to communicate personally with the TV teacher concerning each lesson.

The TV teacher can also profit from the experience of the health and physical education staff. They can suggest innovative ideas, teaching techniques, and instructional materials. They can also render valuable evaluative assistance when they visit classes as a follow-up to the telelessons. Classroom teachers are traditionally kind in their evaluation of other teachers. A more frank appraisal of the telecourse is sometimes elicited when conferences and visitations are conducted by personnel other than the television teacher.

The studio teacher should attempt to have as many meetings with the classroom teacher as possible. When the studio teacher has made many attempts to open this evaluative channel of communication, results are usually positive. Meetings invariably culminate in a joint effort by the two teachers to improve opportunities for students to learn more about health and physical education.

Close friends and family members should also be invited to share in the individual evaluation process. Sometimes only friends or relatives will feel free to tell the studio teacher about mannerisms, dress, speech, and other personal details which augment or detract from the presentation.

Pupil Observation and Feedback

When the lesson is taped and activity is to occur during the program, the television teacher can observe students in the gymnasium as they react to the telecast. This opportunity enables the TV teacher to see if the desired responses occur, if the program challenges the pupils, and if the pace of the lesson is satisfactory.

If the activity of the children is to occur after the telecast, the studio teacher has an opportunity to observe the extent to which

the children's interest is maintained throughout the program, as well as a chance to conduct a question-answer period following the telecast. Children can satisfy their curiosity concerning the program and the TV specialist can question the children to learn if the purposes of the lesson have been met. The TV teacher must be extremely sensitive to the suggestions made in these informal sessions that might be helpful to him in preparing future telelessons.

Panel classroom discussions following a telelesson are also helpful. A panel of pupils, the classroom teacher, and the television teacher can provide evaluative insight as the program is discussed.

The ultimate success of an educational television production is based on how effectively the pupils learn from it.

All evaluation results will reflect improvement in learning when the classroom teacher feels he is an integral part of the lesson and follows through as a member of the teaching team to expand, reinforce, and clarify the purposes of each telelesson.

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CHAPTER 6 THE FUTURE

Chalmer G. Hixson

Television in its various forms has been accepted as a useful tool for instruction and learning in physical education. Acceptance, however, has been based on empirical evidence rather than on research findings, a common practice in physical education. Although an examination of the accompanying bibliography reveals a dearth of research concerning the utilization of television in physical education, most research has been limited to the learning of a specific skill in a particular sport. A few studies have focused on the effectiveness of videotape replay in teaching skills. Several studies have examined the effect of televised instruction on the development of one's self-concept. None has yet been directed toward the effectiveness of televised courses such as *Ready? Set . . . Go!*

Although most studies on the utilization of television in physical education have concluded that learning via television is equally effective and sometimes more so than learning by traditional techniques, other studies have concluded that, at the very least, instruction that uses television is no worse than instruction that does not use it. A number of these studies included deficiencies in experimental design. The use of non-random groups and small samples, and the inability to control variables seem to be common faults. Failure to find significant differences may have been because of ineffective measuring instruments and over-concern for a single variable not sufficiently dominant to produce significant differences. Television is no panacea or miracle worker. As with any other tool, it is of no value unless it is used effectively.

The future must include numerous studies devoted to the many facets of producing and utilizing television. A new generation of physical educators qualified to improve research design and instrumentation is entering the field. They, together with graduate schools and the profession-at-large, are urged to sponsor research on the effective production and utilization of televised physical education instruction.

However, important values other than effective learning are involved. During the 1970 annual AAHPER convention, J. Lloyd Trump pointed to the innovations in education. They present challenges which physical education must meet. Large-small group instruction, individualization of instruction, self-instruction, innovative time schedules, and changes in teachers' roles are essential to meet rising education costs, increased enrollment, and new demands created by societal changes. Television has relevancy here. Is it more economical and equally effective to lease complete courses of televised instruction for dissemination throughout a school district, state, or region than to use traditional approaches? It is more economical and equally effective to use television to bring the world into the classroom rather than take the classroom to the world? What savings can be realized while providing highly effective materials when a school system creates its own library of videotaped interviews with government officials, world authorities, and other important people who visit the school or the community? Few such studies have been completed and at present none is evident in physical education. Action research in the field is essential to deciding such problems.

Since extensive major resources and entire televised courses of the highest quality such as *Ready? Set . . . Go!* are far beyond the resources of most schools and colleges, organizations pool their resources and technical know-how in order to share production costs. A single lesson of *Ready? Set . . . Go!* costs thousands of dollars to produce; but it can be available to entire school systems for as little as $34, a figure well within the means of most schools. The future role of the National Instructional Television Center (NITC), located in Bloomington, Indiana, is of vital concern. Through NITC, cooperative efforts of schools and colleges can provide high quality materials at minimal cost. By supporting the Center, physical education can assure itself of an expanding library of televised instruction readily available to every school system.

Closed-Circuit Television

Perhaps the greatest promise for the future of televised instruction lies with portable closed-circuit systems. They combine professional performance with rugged construction, reliability, and portability at low cost. They are now used primarily for instantaneous replay as feedback in skill analysis. Schools and colleges will continue to provide more of them for this use and for other purposes. Demon-

strations of skill and strategy will be taped to provide models for individual and group instruction. Athletic coaches will utilize videotapes recorded on these systems in place of motion pictures, especially during practice sessions when instant replay can provide immediate feedback. Schools and colleges will construct primitive but effective studios incorporating one, two, or more cameras, thereby enabling them to produce videotapes to meet local needs. Tapes of the show-and-tell phases of instruction in all physical education activities can be produced for immediate and future use. In fact, these phases of instruction may be more effectively taught in a classroom or a viewing center via videotape than in a swimming pool or on a tennis court or playing field via live lecture.

Closed-circuit systems will also provide economical and effective techniques in the preparation and evaluation of pre-service and in-service teachers. The practice of recording children's behavior in various situations to be studied as observational materials in teacher education classes will increase. Taping procedures will prevent the frustrating situation where teacher preparatory students are sent to distant schools to observe specific behaviors, which are not evident during the visits. By videotaping, the professor has at his fingertips an extensive library from which he can select observational materials to use at appropriate times. Closed-circuit television also provides an economical and effective way of recording the teacher preparatory student in action. The videotape thus provides a means for self-evaluation and instructor analysis. Similarly, increasing numbers of schools will use closed-circuit systems for in-service development of teachers. In this way, a teacher far removed from his pre-service preparation can benefit from self-evaluation and supervisory analysis of his teaching techniques via videotape.

Community Antenna (Cable) Television

The rapid growth of community antenna television (CATV) should be considered when listing distinct possibilities for the future use of television. In CATV, the schools have a multichannel capability which makes possible a wide choice of programs. Cable TV does not consume the VHF or UHF spectrum. A community can have up to 40 or more channels.

With CATV, there is the possibility of two-way communications which, for educators, would provide a unique opportunity for both audio and video in both directions. Two-way communication

not only *between* studio guests and viewing educators but also *among* viewing educators appears to be an imminent possibility.

Cablecasting, rather than broadcasting, may be a trend for instruction in the very near future. In the 1980s, transmission will most likely come directly from satellite to school; then, when it is combined with ground cable systems, videotape cassettes/cartridges, and eventually lasers, a multipurpose informational network will have been achieved.

Television Equipment

Undoubtedly, the most evident trend for the future is the continued improvement of television hardware by manufacturers. While improvements have been made during recent years, costs have continually decreased. Physical educators should study the hardware and recommend features and capabilities which will meet needs unique to physical education instruction. Increased portability, battery-powered recorders and cameras, electronic editing, delayed recording of the audio track, reduced costs of maintenance and operation, improvement of zoom lenses, and electronic view finders for cameras will continue to provide greater flexibility and higher quality recordings. Video recorders using advanced magnetic discs, tape loops, and cassettes will provide continuous replay as well as stop action so that any movement can be immediately observed and reinforced for rapid, effective learning.

Of particular import is the agreement by a sizable group of manufacturers to make their recorders compatible. In the future, a tape recorder on one of these brands can be played back on another. This will facilitate the ready exchange of videotapes and discs among schools. The manufacturers' success in solving this problem as well as others leads to the conclusion that physical educators will be hard pressed to develop the "software" to exploit the equipment which will be available in the future.

The Center

The Resource Center on Media in Physical Education has been established recently by AAHPER's Physical Education Division. Its main function is to develop a library of video- and audiotapes which can be copied at minimal cost for schools, colleges, and members of the profession. Eventually the Center will assume some of the responsibilities for collecting and disseminating in-

formation concerning the production and utilization of television now conducted by the Committee on the Utilization of Television. A project is being considered to produce a series of video- and audiotapes for AAHPER's archives. In cooperation with the archivist, E. Craig Davis, recordings will be made of selected conference and convention proceedings and of presentations by physical education leaders. The tapes, stored for historical reference, will be available at minimal cost to schools and colleges. In time, the Resource Center is to expand its functions to include additional media and to serve as a catalyst in developing and conducting research on the roles of all media. This writer believes that the Resource Center will become an important agent for encouraging the use of all media in teaching physical education.

The future also holds the promise of an ever-increasing supply of physical educators qualified to produce and utilize televised instruction. The adage, "One teaches as he was taught," may well apply to the graduates of teacher education institutions which utilize television as an integral part of courses and laboratory instruction. Many institutions are including courses devoted to the production and utilization of television in their curricula. It is foreseen that workshops and conference programs will conduct in-service sessions to train teachers how to incorporate televised instruction in physical education.

SUMMARY

The following factors combine to indicate that television will play an ever expanding role in physical education instruction: an increased amount of valid research, greater utilization and production of complete televised courses as major curricula resources and as in-service education, expanding roles for the National Instruction Television Center and the Resource Center on Media in Physical Education, more extensive use of portable closed-circuit television systems, continued improvement in television equipment, and an expanding supply of qualified teachers.

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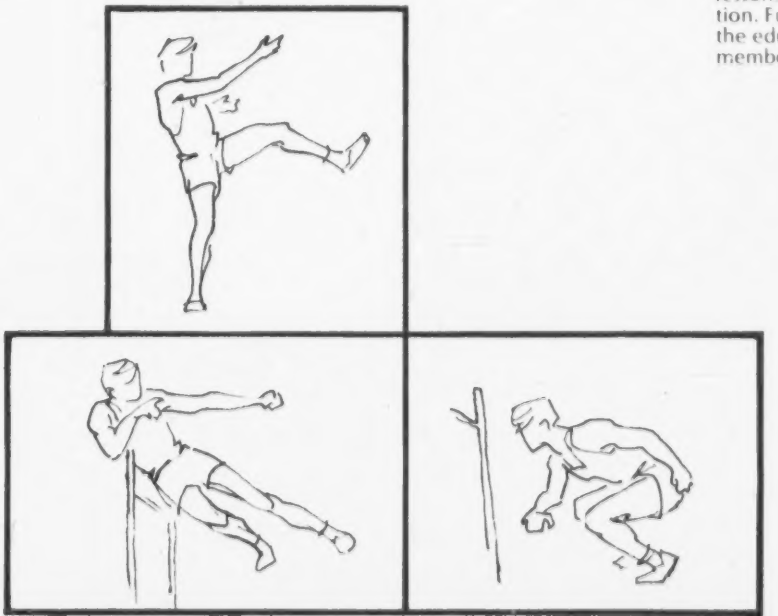
PRODUCTION & UTILIZATION IN PHYSICAL EDUCATION

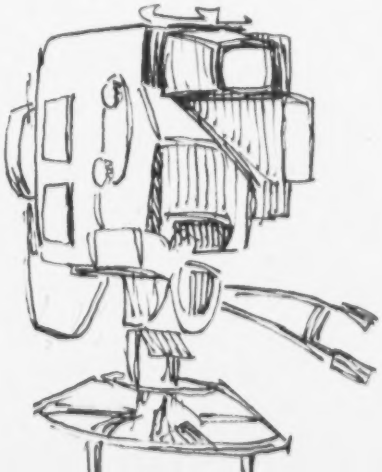
REALITIES AND POTENTIALITIES OF TV IN PHYSICAL EDUCATION

1. Physical educators should examine the processes of becoming physically educated and determine which processes could best be mediated by TV.
2. The enhancement of student learning should be the primary reason for developing TV programming in physical education.
3. Selection of the type of TV series to be used should be determined by the needs of the students, the state of the existing curriculum, and the availability of certified physical educators.
4. To insure a wider range of TV offerings for meeting local needs, physical educators should initiate and develop a variety of series.
5. In addition to using high quality, packaged ITV series, physical educators should make every effort to obtain low cost, portable, helical scan VTR systems for bit productions.
6. More sophisticated techniques are often introduced before they are completely researched; some experimentation should be done by physical educators.
7. With care in selection of (1) behavioral objectives, (2) type of telelessons, (3) content and programming, and (4) evaluation, better physically educated individuals should be forthcoming.



INITIATION OF AN ITV SERIES IN HEALTH EDUCATION OR PHYSICAL EDUCATION

1. ITV has the ability, at a relatively low cost, to (1) reach a large audience with expert, valid instruction, (2) support and update the skills, teaching processes, and teachers, (3) provide telelessons which can be repeatedly shown via kinescopes and videotapes, (4) provide quality in-service training for teachers, and (5) provide quality instruction when it is either absent or variable.
2. Expert help from the television support staff is available at each step in the process of initiating physical education ITV.
3. It is desirable to obtain validation for the telelessons from established and accepted professional sources.
4. Pilot programs can minimize future problems and maximize a quality product if they are structured properly and if critical comments of the program are evaluated carefully.
5. Orientation program(s) can be very worthwhile for classroom teachers by clearly setting forth the objectives, describing the format, and preparing them to cope with any predictable exigencies resulting from the telelessons.
6. The classroom teacher, regardless of his proficiency and expertise as a physical educator, needs some degree of orientation on how to integrate the telelessons into his particular classroom teaching situation. Furthermore, ITV can serve as a medium for the education and training of teachers (and other members of the community) if so desired.



PRODUCTION OF A TELEVISION SERIES

1. Because of space requirements for physical education programming, imaginative planning is necessary for functional and safe selection and utilization of the site.
2. The production of desired sound and elimination of extraneous sound require experimentation and practice if the production of educationally valuable programming is to take place.
3. Televised physical education programs should emphasize movement and demonstration, with oral instruction kept at a minimum.
4. The physical education teacher should be involved in creative program planning and be able to meet emergencies which occur in a medium as complicated as television.

UTILIZATION OF TELEVISION IN THE CLASSROOM

1. Students tend to reflect the teacher's attitude toward ITV.
2. Only the classroom teacher can provide the vital personalized and individualized approach to teaching and learning.
3. How ITV is to be utilized is most important and should be given careful thought as to different methods available: total teaching, major resource, supplementary and enrichment, in a self-instructional laboratory, and other possibilities.
4. Establishing good interaction between the television teacher and the classroom teacher is vital.
5. Attention to size, type, and placement of television receivers improves environmental setting for reception of the telelesson.
6. Classroom teachers are expected to enforce rules for proper care and usage of television receivers.
7. Carefully planned interaction between the classroom teacher and students helps create a suitable learning environment.
8. The classroom teacher plays an active role in setting attitudes by becoming a behavioral model during telelessons.
9. Carefully planned post-telelesson activities relate concepts to classroom discussions and enhance the learning environment.